



H. Haffsberg Sc.

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Physician, *Etatis 58.*



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17. Febr.
1792

THE TRUE AMAZONS: OR, *Thompson* The MONARCHY of B E E S.

Being a New Discovery and Improvement
of those Wonderful Creatures.

Wherein is Experimentally Demonstrated,

- I. That they are all govern'd by a QUEEN.
- II. The Amazing Beauty and Dignity of her Person.
- III. Her extraordinary Authority and Power.
- IV. Their Exceeding Loyalty and unparalleled Love to
their QUEEN.
- V. Their Sex, Male and Female.
- VI. The Manner of their Breeding.
- VII. Their Wars.
- VIII. Their Enemies, with Directions plain and easy
how to manage them, both in Straw-Hives and
Transparent Boxes; so that with laying out but
Four or Five Pounds, in Three or Four Years, if
the Summers are kind, you may get Thirty or
Forty Pounds per Annum.

Also how to make the English WINE or MEAD, equal
if not superior to the best of other WINES.

By JOSEPH WARDER of Croydon, PHYSICIAN.

K.
The Third Edition with Additions.

Sic vos non vobis mellificatis Apes. Virg.

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in Fleet-street, and WILLIAM TAYLOR at the Ship
in Pater-noster-row. 1716.

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Jos: Banks

TO THE
QUEEN'S
Most Excellent Majesty.

M A D A M,

HERE is nothing can excuse the Presumption I am guilty of, in thus approaching your Sacred Hands with so mean a Trifle, but the Subject here treated of, which is of Princes and Potentates, Kingdoms and Territories, Pre-

A 3

rogd-

rogative and Property, Domi-
nion and Loyalty, War and
Peace.

I have with a Studious De-
light, for near Twenty Years
past, convers'd with these In-
nocent Creatures the Bees, and
have not failed (to take all Op-
portunities) to inform my self,
by the most curious Observations
of their Nature and Oeconomy,
wherein I find so many things
that resemble Your Majesty's
happy State and Government,
that all the while I was writing
of this Book, I could not forbear
wishing I might Dedicate it to
Your Majesty; but those Ambi-
tious

tious Thoughts of mine were soon curb'd, by reflecting on the Mean-
ness of the Oblation, till I recover'd my self by the Consideration
of Your extensive Goodness, who like the Sun display the Beams
of Your Favour on the Unwor-
thy, as well as the Meritori-
ous.

Indeed, no Monarch in the World is so absolute as the Queen of the Bees; (which pleads very much with me, that Monarchy is founded in Nature, and prov'd by the great Ruler of Princes.) But oh, what Harmony, what lovely Order is there in the Government of the Bees!

viii The Dedication.

The Queen-Bee Governs with Clemency and Sweetness, so doth Your Majesty; she is Obey'd and Defended, out of Choice and Inclination by her Subjects, so is Your Majesty. And here I cannot but wish that all Your Majesty's Subjects were as unanimously Loyal as the Subjects of the Queen-Bee, in whose Nature there is so strongly (as well as strangely) plac'd a Principle of Obedience, whereas I doubt here Your Majesty is not altogether so happy; for though all the Thousands of Your Britan-nick Israel esteem Your Majesty's Person as Sacred; and scarce such a Villain is among.

The Dedication. ix

us, who would not lose his Life
in the Defence of Your Majesty;
yet I fear 'tis not hard to find
some few unquiet Spirits, tho'
'tis not in their Power, to trou-
ble the Serenity of Your Govern-
ment, or disturb the Quiet of
Your English Heart.

I here present Your Majesty
with a true State of these A-
mazons, or rather, a State of
the true Amazons; and tho'
there be Male as well as Fe-
male amongst them, 'tis not for
nothing, nor by chance, that He
who is Wisdom itself, should thus
place the Government of their
famous Monarchy in a Queen,
who

Bee

who *doth*, tho' with aweful Distance from Your Majesty, sway a peaceful Sceptre, if not affronted nor assaulted ; otherwise like that of Your Majesty's ; one Terrible to her Enemies, who will maintain War with any State that dares Assault her, or invade even the Borders of her Territories, attempting any Plunder or Devastation on the Goods of her Subjects. These noble Creatures have (of late especially) been much neglected, and their Industry not improved in Your Majesty's Dominions ; the chief Cause of which, has been Ignorance of the right way of managing them, and of the great Pro-

Profit arising from their Labours, which Defect I have here supplied, by Directions at large, gathered from undeniable Experience, which will exceedingly help the Poor, as well as delight the Rich; not only with various Observations and Speculations, by means of their Transparent Hives here described, but also with a Liquor no ways inferior to the best of Wines, coming either from France or Spain; which if they will but try, they will soon sit down contented under their own Vine, and with me refresh themselves, with Drinking Your Majesty's Health in a Glass of such as our Bees can

xii The Dedication.

can procure us; and no more
Long for the Expensive Wine
of our Enemies.

Thus, Dread Sovereign, I
have presumed to lay my Queen-
Bee, with all her Subjects, at
Your Royal Feet for Protection,
wishing that all Your Majesty's
Subjects may be as Affectionate
and Dutiful to Your Majesty as
my Bees are to their Queen;
then would the pressing Weight
of Government grow easy on
Your Royal Shoulders; and to
the Joy and Happiness of all
Your Subjects, You would be
long, very long able to bear the
Weight of Your Imperial Crown.

And

And when, to the unexpressible Grief of Your Loving Subjects, You lay down this Your Earthly Diadem, that it may be to Your Majesty a most happy Exchange for a Crown of Eternal Glory, is, and shall be the Prayer of

Dread Sovereign,

Your Most Loyal

And Most Dutiful

Subject and Servant,

JOSEPH WARDER.

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THE TRUE
AMAZONS:
 OR,
Monarchy of BEES.

C H A P. I.

The Description and Anatomy of the BEE.

THE Bee of all Insects is certainly the most noble; for tho' there are innumerable variety of Insects that afford us matter for Speculation and Admiration, (not without their use) and do loudly proclaim their thoughtful Maker not in haste in their Formation; yet none can compare with the Bee, if we add to their curious Form, their admirable Work, and the great Benefit, that by their most indefatigable Labour doth arise to Man, for whom they were created. And since the knowing their

B Nature,

Nature, doth very much conduce to the improving their Labours; and finding that most of the Authors now extant, that have given the World an Account of their Notions and Speculations about the Bees, have taken many things upon Trust, and handed them down to Posterity for Certainties, either having no Experience at all, or else, through the Multiplicity of Avocations, have not been very curious in their Observations; or have been too short, (as some) or too voluminous (as others) for the Vulgar to apprehend, they being still at a great loss how to manage these their industrious Servants to the best Advantage, for their Profit as well as Pleasure; the supplying of which Defect, is the Design of this Book. I have try'd for many Years, the manifold Ways of keeping of Bees; and am at last prevail'd upon, by the Importunities of many, to give the World an Account of what Knowledge I have, by infallible Experience gain'd, that I may not only direct my Countrymen how to manage them, but free them from many Mistakes about them.

The Bee is a small Creature, about three quarters of an Inch long, having four Wings most curiously shaped, with strong Fibres round and cross them, to strengthen the fine Cypress of which they are fram'd, six Legs, a large Head, but very small Neck, also very slender in the Waste or middle Part. Nature hath provided her with two sorts of Instruments for War and Defence, *viz.* her Fangs, or Mouth, wherein are her Teeth, but meet in a different Way from other Creatures, they meeting side-ways

ways like a Pair of Pincers, and not one over the other ; with which they defend themselves, and assault others. But their chief Instrument for War, is in their Tail, and call'd their Sting, with their Fangs they lay hold of Robbers which come to steal their Honey, whilst another comes and carries Death to her Bowels with her Spear or Sting, which always carries Death where-ever it comes amongst their own kind, and generally Death to themselves, when their Sting pierceth any thing human ; for tho' sometimes a Bee may give you a light touch with her Spear, and away, yet generally speaking, they leave their Sting behind them, with their Bowels joyning to it, and consequently their Life ; for tho' they die not presently, yet they live not an Hour, and would live as long, nay I believe longer, cut asunder in the Middle, than they will without their Stings. Their Sting is very taper and sharp, very apt, when exerted by the Bee, to pierce the Skin or any other harder Body ; I have had my Hand stung through a thick Buck-skin Glove : But notwithstanding all this its Strength, it is a hollow Tube, and contains its Poyson about the Middle of it, plainly discover'd by the help of Glasses. Their Eyes are very large, cover'd over with a thick horny Membrane, which is the occasion of their being so dim-sighted : But to supply this Defect, Nature hath given her two Horns, which grow above her Eyes, about the tenth of an Inch long, in each of which there are two Joints, one in the Middle and another near the end, by which they can put them forth when they will to the full length,

and draw them in close to their Head when they please. Thele are the Instruments of Feeling; they commonly carry them thrust out before them, by which they feel tenderly any thing that is tangible, which doth hugely help their dimness of Sight. Her Tongue is much longer than her Mouth will contain, and so is doubled underneath, and reacheth a good way down her Breast. Her Body is all over hairy as a Fox, and her Head too, nay a great Part of her very Eyes are cover'd with small Hairs, but so small that they cannot be discern'd by the naked Eye, without the help of the Microscope, which will also discover the Brain in their Head. Within the Breast, she hath a reddish fibrous Flesh, with Heart and Lungs, proper Instruments for breathing: In the hinder Parts there is a Gut, with its *Anus* and *Sphincter*, as also their Bottle or Bag, in which they carry their Honey, which (by Muscles fitly adapted for that purpose) she emptyeth into the Honeycomb: In this Bag she often fetcheth Water, to mix up her Sandarach or Bee-bread, for the feeding her Young, which they are very diligent and careful about, being very fond Mothers of their Children, till they can shift for themselves; for after great Pains taken, and curious Observations made, with the use of the best Glasses, I must come to this certain Conclusion, that all the working Bees are Females.

C H A P. II.

*The Description and Anatomy of the Male Bee,
vulgarly known by that ignominious Name of a
Drone.*

There are none that have kept Bees at all, but they know the Drones from the working Bees; but they are for the most part absolutely ignorant what these Drones are, or what Nature hath design'd them for. I perceive the Opinion that most prevails amongst the Country Bee Mistresses, is, that they are Bees that have lost their 'Sting, and so growing to that prodigious Bigness, (out of all Proportion to the other Bees) they become Drones. Now this their Mistake is occasion'd by their seeing they do not work, nor cannot sting, and that the smaller Bees bear rule over them, and so they give them that contemptible proverbial Name of a Drone.

Now I conceive I ought to speak something in the behalf of this poor abused and despised Creature, especially since the Management of Bees doth not a little depend upon the right knowing of these Drones.

There have been many Errors about them, and some as old as *Virgil*, (*Ignavum fucus pecus a præsepibus arcent*) from whom and many others, (not being willing to go through thick and thin for company) I must crave leave to differ concerning this noble Creature, which I shall no longer call a Drone, but the Male Bee.

Since he is very industrious in the Work which Nature hath design'd him for, which is not only Procreation, but his great Usefulness in sitt-
ing upon, and hatching the Eggs, and by his great Heat doth keep warm the Brood when hatch'd, thereby giving the working Bees the more Liberty to follow their Labours abroad, whilst they supply their Place at home, by taking care of the Young ; so that the Male Bee is not only of great use, but of absolute neces-
sity, not only to the being, but the well-being of the Colony of Bees, which we shall describe as follows.

The supposed Drone Bee then is the Male Bee, as will at large hereafter appear. About half as big again as the Female working Bee, somewhat longer, and not quite so dark colour'd about the Head and Shoulders, especially his Head and Eyes much larger than the Honey-
Bee, his Voice much more loud and dreadful, often causing Fear where no Fear is, especially to the fair and timorous Sex ; for he having not any Sting, is not in the least capable of hurting them nor any other Creature, but is absolutely under the Dominion of the Females. But to go on, he hath his Velvet Cape about his Neck, and is very hairy all over his Back ; his Tongue is much shorter than that of the Females, neither can he work if he would, his Tongue not being long enough to reach the Honey out of the socketed Flowers.

As to his Sex, there are many Arguments for what I assert, as that all Creatures breed Male and Female ; and he, as is often seen in other Creatures, being the biggest, 'tis most probable

probable that he is of the Male kind. I confess, that being subject to the other Bees is an Argument against me, but as there is no general Rule without an Exception, so here I must beg Mr. *Lilly*'s leave to assert contrary to Grammar, that the Feminine is more worthy than the Masculine amongst the Bees: And here I shall endeavour to draw my Reader out of those unintelligible Perplexities, that others besides Mr. *Rousden* have impos'd on the World. Mr. *Rousden*, I think, was the last Author that hath writ about these deserving Creatures, and indeed tells us in his Discovery of Bees, that the vulgar Opinion, that the Drone-Bee was a working Bee that had lost her Sting, and so grew bigger, was a Mistake; to prove which, he tells us a Story much less probable, *viz.* that he is bred of animable Matter gather'd by the working Bees, and cast into the Drone Comb, into which animable Matter, the King Bee did cast his Sperm, and so Drones are produc'd, which is ridiculously false; for first, there is no animable Matter gather'd by the Bees, nor if there were, is there any King Bee to impregnate it by his seminal Virtue; but of this more when we come to treat of their breeding and Government.

I confess it was a bold stroke of Mr. *Rousden*, to lay down such an Hypothesis, and impose it on the World as Matter of Fact, without giving us one rational Argument to prove it, or any one Experiment by which he was let into the Secret. But to put the Matter into a clear light, let any Gentleman (whose Curiosity leads him to know the Truth) but gently call

up with a Launcet, or very sharp Penknife, the Belly or hinder part of the Drone-bee, there he shall find in the same manner as in Birds, a large Pair of Testicles, as big as great Pins Heads, Milk white, joyn'd together upward by the Spermatick Vessel, and hanging divided downwards in the very Shape of the Stones of a Lamb: The *Penis* or Instrument of Generation, indeed is much more strange, and will seem incredible to the Reader, till he hath try'd the Experiment; it grows near the end of the Tail, and sometimes only gently pressing one of these large Bees whilst alive, will make it start out; the strangeness of its Form and Magnitude at first did not a little surprize me. It is of a reddish white, and in shape much resembling the Head of a Bullock with its Horns. This strange difference from the common Bee, doth make some of Opinion, that they are of a different Species of Bees, and (as *Rousden*) bred in a different Manner, when indeed it is plain they are all of one Species, only differing in Sex, Male and Female, and somewhat in Magnitude and Colour, occasion'd by their difference in Sex, as it is in most other Creatures, as in Man, the Top of all the sublunary Creation; our Bodies more strong and robust, our Voice, like that of the Male Bee, more deep and dreadful, whilst the tender Sex, like that of the Honey-bee, is smaller, more shrill and delightful; but to say all that will be useful of the Male-bee, or the supposed Drone, as they are the Male-bee, so they are absolutely necessary to the breeding of Bees; and as they are helpful in the managing of their Young,

Young, so are they very necessary, for by their great Heat they sit, and hatch the Brood; keeping the Eggs warm, whilst the Honey-bees, or Females, follow their delightful Vocation of gathering and bringing home of Honey; during which time, the Drone-bees are not suffer'd to stir from the Brood, but about one or two a Clock, when the chief part of the Day's work is done by the Bees, most of them repairing home, take care of their own Brood, and so give leave to these their obedient Masculine Servants to recreate themselves abroad, their Heat now being no longer necessary within Doors; then you shall see the Male-bees very thick about the Mouth of the Hive, flying to and fro five or six large Circuits, to recreate and empty themselves, then returning again to their beloved Nectar, where they are for a time kindly receiv'd by their imperious Dames, especially in the Months of *May* and *June*, that being the chief time of their breeding; and here, by the Way, let me caution those who are so happy as to keep these industrious Servants, against an unhappy Mistake which they are apt to fall into, of killing the Male-bee or Drone as soon as they see them, by which they hinder their Breed, (the Male-bees being but few in Number at first) to the great Damage, if not utter Destruction of the Hive of Bees; for they had better kill six working Bees, than one of these great Bees in *May*, or the beginning of *June*, unless you can suppose, that a Shepherd having Ten Rams amongst a Thousand Ewes, should be so void of Sense, as to imagine that the best way to increase his Flock,

Flock, would be to kill half a dozen of his Rams, that they may not eat up the Pasture from the Ewes; let me therefore perswade you to spare him a little longer, for he is a very short liv'd Creature, and he will not fail to make you amends, if he be not slain, to die of himself, but of this more in the next Chapter.

C H A P. III.

The Time and Manner of their breeding, length of Life, cause of Death, and manner of Burial.

AS to the time of their breeding the, forward Stocks begin in *February*, and the latter, or those that are not so lusty, leave not off till the latter end of *July*: So that there are six Months in which Bees are bred; and the sooner they begin, the sooner they make an end, tho' there are more Bees bred in two Months, than in all the other four, and these two Months, for the most part, are *May* and *June*, tho' this is somewhat uncertain; for in a very forward Spring the Flowers blow early, by which means the Bees, by early gathering grow lusty betimes, and throwing off their Winter Torpidity, fall to breeding the sooner; in this case the two chief breeding Months, may be *April* and *May*; so in a moderate warm showery Spring, tho' not so warm as was last spoken of, the chief of their breeding will be from a Fortnight in *April*, to a Fortnight in *June*; so contrarywise in a very

very backward Spring, the Flowers blow late, and so the Bees are late before they are invigorated for breeding, and then *June* and *July* will be the two chief Months for their breeding; and if it be an extreme cold Spring, the more backward will the Bees be in their breeding. But it happens best for the Bees, and most profitable for the Bee Master, when the Spring is neither very early nor very backward, having formerly, to my cost, had Experience of both these Extremes.

My Reasons, grounded on Experience, are these. In a very early Spring, when *February* and *March* have been very warm, the Bees having (as above) receiv'd Vigour from the early Flowers, begin to breed early; so that in *April* the Hive is full of Bees and ready to swarm, nay sometimes have swarmed tho' very rarely; and all this is no Damage, but very happy, if the Spring continue to be very warm, that they keep on their Work as well as their breeding, then all will be safe: But if the Stock be not very rich in Honey, and there should come but a Week or two of cold Weather to hinder their Working, they will all be in danger of being lost; for the Family still increasing, more and more Brood still coming to hand, not only to be capable, but to have an absolute necessity of Feeding, and whilst they expect Food from their pitiful Mothers, who have none to give them, nor any for themselves, and the Weather still continuing cold or wet, or (as it is sometimes) both, that these provident Mothers cannot go abroad to get Bread for their Children, both Young and Old must unavoidably perish together; so that in this case the Stocks that are most forward

forward in breeding, tho' always the best, are in more danger than those that did not begin to breed so early: But this Misfortune may be happily prevented by the wary Bee Master, (the manner how, you shall find in the Chapter of feeding the Bees.) The other Extreme, is a very cold and backward Spring, when the Flowers blow not, by reason of the the Coldness of the Weather, many of them being kept in their Socket a long time, that should have blown, had any warm Weather come, till at length the Season of the Year being far advanc'd, the Weather changes of a sudden, becomes warm, or perhaps very hot, so that abundance of Flowers blow together, just in the height of their breeding, at which time Honey-gathering coming all together, so that their working must hinder their breeding, or their breeding must hinder their working; and if a very dry Summer should follow a cold and backward Spring, the Stalls will be all poor; about which great care must be taken in feeding, or else the next Spring you will find your self a broken Bee-marchant, and may try *Virgil's* way of making new ones, [*Virg. Georg. 4.*] if you think fit. But to go on, a Bee is first an Egg, and not as Mr. *Rousden* ignorantly supposes, made of animable Matter, (which he affirms of the Female Bee, as well as the Drone) to be gather'd by the Bees from the Flowers and cast into the Combs, as their proper *Matrix*; then he makes a King Bee, for there is no such thing (*in rerum natura*) and presently makes a Town Bull of his King; for he tells us, that the King Bee goes from Cell to Cell, and casts his Seed into every Cell,

of this prepar'd animable Matter and thus Bees, as well as Drones, are produc'd, as was before hinted: And indeed I might with as much Probability affirm, that some Fly or other had cast his Seed into his Brain, which being ~~being~~ before adapted to receive the prolifick Virtue of the Fly, hath brought forth these improvable Maggots into the World. All that I can say for him, is, that I believe he might be drawn into these Mistakes, by relying too much upon the Silver-tongu'd *Virgil*, who says they fetch their Young from the Flowers; and not observing the Sex of their Commander, gives her the Title of *Rex Apium*: Which, 'tis very probable, drew Mr. *Rousden* into these two Mistakes, being resolv'd, not to contradict so celebrated a Poet; but he ought to have consider'd, (that tho' *Virgil* were a great Poet, and the Bee a noble Subject for such a Pen) that in treating of them, he writes more like a Poet, than an experienc'd Bee-master. Indeed there are many ancient, as well as this modern Author, that have strangely deluded the World, with their unexperienc'd Whimseys, about the Generation of Bees; some, that they are bred of Honey, but this cannot be, except by Putrifaction, and that cannot be, for Honey putrifieth not, but by its conservative Virtue, doth prevent other Bodies from Putrifaction. But I shall not trouble the Reader with any more of these antiquated Impertinences, but proceed to matter of Fact: These Eggs, which are produc'd by the Bees, and in their time do become Bees, are exceeding white, something bigger than the common Flyblow, but not so long nor

so big as the Eggs of the Ant ; they are cast into the empty Cells, not careleſly into any Cell, but only the middle Cells, which are always appointed for the breeding Cells, whilst those all round the Hive are reserv'd for the Honey ; Nature, or rather the GOD of Nature, having taught these useful Creatures, that if they should cast their Eggs near the outsides of the Hive, or Box, there would not Heat ſufficient come to them to hatch, and bring them to Perfection ; which Inconveniency they carefully avoid, by laying their Eggs all close one to another, near the Center of the Hive or Box, but always exactly avoiding the Confusion and Abortion that would be produced, if they should lay above one Egg in a Cell : No Eggs are generally laid within three Inches of the top, bottom, or ſides of the Hive or Box, ſo that the Bees being all round the Cells where their Eggs are laid, as well as above and below, ſo that by their natural Heat, that doth always keep them warm, they are brought on *gradatim*, or ſtep by ſtep, till they are hatched, and come forth a perfect Bee : For this great and marvellous Work, as it is not done all at once, ſo are the gradual Steps that Nature takes, in bringing these Eggs to be perfect Bees, both ſurprizing and amazing ; for the Egg is with all the Care and Exactness laid, with one End touching one of the ſix Angles, or Corners of the Cell, that as it grows in length, as well as bigness, it may be the longer before it comes to touch the opposite Angle with its other End, which otherwise would incommode the Embriōn ; ſor if it ſhould have been laid againſt one

one of its flat Sides, or Squares, there would not have been so much room for its growth from Square to Square, as from Corner to Corner, so that always you find them, when first laid, with one End of the Egg touching one of the Corners, and the other End pointing against its opposite Corner: But this Posture continues not long, and serves only for that time that this Embrion is without Life or Motion; for at that time that it comes to touch its opposite Angle, it receives its first Life, (bear with the Expression, for I must anon give you account of a second) and then it comes to be a little sort of a Maggot, and turns it self, rounding at the Bottom of the Cell, much resembling a Half-moon: In this Position it continues till one end comes to touch the other in the Form of a Ring, till, by reason of its continual Growth, it can lie no longer in that Posture; then, with considerable Life and Vigor, it turns it self, thrusting one End towards the Mouth of the Cell, and from that time lies length-ways; Nature directing that this Creature shall thrust it self with that End forward toward the Mouth of the Cell, which is to be the Head; thus it remains, growing both in length and magnitude very fast, and is now a Creature of much Life Vigour and Motion, much like those Maggots which we get of the Butchers, or Chandlers, called by us Gentles, which we use in Fishing, but much larger and whiter, but no manner of sign of Wings, Neck, or Legs: And here is a Wonder! this Creature is now as big as a Bee, and all this while fed by the Bees, but is no more like a Bee than a Turnep. Now comes

comes on the time, when it must for a while cease to live, at least in all appearance, that it may again live a more glorious Creature: When the Creature is come to this bigness, the Bees close up the top of every Cell with Wax, their fond Parents (at least as to sight) taking their leave of these their helpless Children, they being every one fast sealed up in its proper *Matrix*, where they can have no Food, neither can the least Air come near them; and this work of closing up these Cells, is, according to the best Conjecture I can make, (for I can do no more) about the fourteenth Day; and thus it remains closed up about seven Days more, to all appearance without Life or Motion: But Nature, who never ceases her Diligence in bringing her Works to Perfection, is not all this while idle, but very busy in forming this ill-shapen Maggot, before spoken of, into a Bee; the first appearance of this Work is in her Neck, (which you may plainly see, in few Days after they are closed up, if you will have the Curiosity to break them up) then the Middle, or Waste, begins to be smaller, before there be any sign of Legs, or Wings; then the Eyes; and last of all the four Wings, and six Legs, before spoken of, in the Chapter of the *Anatomy of the Bee*: At last, about the twenty first Day from its being an Egg it is hatched, by lifting up, with its own horny Head, the aforesaid Sealings or waxen Covers, and is now a perfect Bee, for all its Parts and Shapes too, and differs only from its Mother in Colour, being always whiter than the old ones for a time, and are always fed for some Days at the Mouth, as the Sparrow feeds her Young, and

and then begin to fly abroad, but very often venture too soon to leave their tender Mothers, to atchieve the great Busines of Honey-gathering ; so being scarce able to fly, they often fall down at the Mouth of the Hive on the Ground, and can never rise to recover home again, but must unavoidably perish.

*Like forward Youth grasping the weighty Shield,
And pond'rous Spear, too late his Error knows,
That his unpractis'd Nerves at last must yield
To his more strong and more victorious Foes.*

But the Numbers are not great of these forward Viragos, neither are all the young Bees that you find fallen and crawling in your Bee-garden of this sort, but for the most part they are such as are cast out, by reason of some Defect in Nature, which I have very often observed, when I have taken them up in order to save their Lives; but upon curious Examination, have found they have wanted a Leg or Legs, or a Wing or two. I have known some thrown out that have had all their Parts exactly perfect, but only one of the four Wings have not been quite so long as it ought to have been; and by that means uncapable of flying abroad to gather Honey, and so are thrown out as useleſs, lest by keeping them in, they should become a Charge to the Family; for the Law here amongst these industrious Dames, is, no Eating without Working; tho' this their general Rule is not without Exception, for to the Male-Bee they willingly afford Honey, (tho' he Work not) as long as they

find his Company beneficial to the Publick ; but all the Bee's Eggs come not to be Bees, no more than all Hen Eggs come to be Chickens, tho' most of them, if not all, pass the first part of their Metamorphosis, from an Egg to a Worm, and then through some Miscarriage or other within the Hive, some of them die in their Cells ; but this seldom happens but to such as are bred early in the Spring, who are in more danger of proving Abortives, than those that are bred in the warmer Months ; for in the Spring, the Bees being but few in Number, lay many Eggs, in order to encrease their Family ; so that the Weather being cold, these Eggs require no less than the Warmth of the whole Number, to vivify and hatch them. Now this being a Work of Time, it often happens that of a sudden the Weather alters to be very moderate, and the warm Sun giving notice to these industrious Creatures, that there is Honey abroad to be gathered, they advance to the City Gates, (the Mouth of the Hive) and finding it very warm, they send forth a Squadron to fetch in Honey, who returning richly laden, do animate their fellow Citizens to sally out and try their Fortune also, then sending out more numerous Detachments than before, to fetch in Honey, their Beloved Nectar, they thereby leave the young Brood, especially those of them that are in the lowermost Combs, too much expos'd to the piercing Air, and so it is chill'd in the Combs, and becomes Abortive ; for tho' the Bees are not only so careful, but extremely zealous for the Preservation of their Young, that

that they will venture their own Lives in their Defence ; yet when a warm Day doth present Honey gathering before them in the Spring, they are apt to draw out too great Numbers for that Service, and so hazard a part of their Brood, rather than venture the losing of an Opportunity, which perhaps the next Day would not produce. So diligent are they in their gathering of Honey at this time of the Year, that if the next Day prove Warm and Fair, they go forth in the same manner to their Work as before ; nay, let the Warm and Fair Weather continue never so long, they will still keep on their Labours, and will not lose so much Time as to perform the Funeral Rites of their Dead Children ; not that they are negligent or careless, or do defer this piece of Cleanliness and Decency for any other Reason, but that only of following their Labours close, to bring in Food to maintain their Living Children, rather than spend their precious Time wherein Honey may be got, in that now unnecessary Work of Burying their Dead ; for should they lose these favourable Opportunities of gathering Honey in the Spring, and Cold Weather should come on, and continue long, as sometimes to my Cost I have known it, especially if the Stock be not very Rich, many Young Bees coming to hand that must be fed, and the bad Weather continuing to hinder their provident Mothers from Working, both Young and Old must die together ; which fatal Disaster these laborious Creatures prevent by their above-mentioned Diligence, in laying hold of every fair Opportunity

tunity for bringing in Provision ; but whenever there comes a warm rainy Day, than they are totally hindred from going out to gather Food, these curious Contrivers set apart that Time for the Solemnizing the Funerals of the Dead ; and let any who are curious but observe it, and they shall hear them very busy within the Hive, and see them dragging out their white Dead young Bees, those that have them in Boxes with Glass Windows, may with more Satisfaction gratify their Curiosity ; Two or Three Bees carrying forth one dead one, and when they have got the dead Body clear of all Incumbrances, without the Mouth of the Hive, then sometimes a single Bee will take him up with his fore Legs, and fly quite away with him out of sight ; and sometimes if the Weight be too great for one Bee to carry off, then I have seen two of them lay hold of the Dead Corps, one at the Head, and the other at the Tail, and so fly away with her, and when they are got about twenty or thirty Yards off the Hive, then they drop their Burthen. But I have often seen that a single Bee endeavouring to perform this Work alone, has dropt her dead Burthen near the Mouth of the Hive on the Ground, and go again and try with all her Might to recover the dead Corps up again, in order to bury the Body farther from the Hive, and sometimes with Success, have again recover'd it up into the Air, and carried it quite away out of sight ; they keep on this Work all the while that it continues warm and wet, or at least till they have thoroughly cleans'd the whole Hive, not only

Only from dead Bees, but all other things that are offensive to them, that is in their power to remove. But, if they are never so earnestly engaged in this Work, if the Sun shine out, they leave what's undone till the next Opportunity, and fall to their more necessary and delightful Work of gathering Honey ; when, I say, if the warm Rain continue, I mean such warm Weather as would permit the Bees to go abroad to gather Honey, did not Rain prevent them ; and so being forc'd to stay at home, not out of choice, but necessity ; they are not idle, but like good House-wives mind their Domestick Affairs, which can as well be performed at that time as any other. For if it be very Cold, tho' it be in the Spring, and there are Flowers blown, and Honey in them, and no Rain to hinder them, they stir not from the Hive, or perform any cleansing Work within, well knowing that they cannot bear such kind of Weather abroad, nor dividing themselves within about the necessary Work as above, but are forc'd to make the best Defence they can against it at Home for their own Security, for they cling all very close together betwixt the Combs in the Center of the Hive, by which means their natural Heat is not only imparted to one another, for their own common Preservation, but doth also keep the Brood of young Bees very warm, and preserve them in their progressive Growth, which otherwise would be in great danger of being Chill'd, not daring to break the Cluster ; for if by any Force, or Disturbance, they are forced one from another in cold Weather,

they are in a Moment so chill'd, that they can neither fly nor go, and in a short time die.

*The burying of the Dead here some contrive,
Some nurse the future Nation of the Hive.
Some feed their young, whilst others cleanse the Cell,
And some prepare for Winter Hydromel.*

The Age of Bees, and Cause of Death.

THE Age of a Bee is at longest but a Year, and the Wonder is not that they live so short a time; (but considering how many Enemies they have, and how many Casualties they are subject to) that they live so long. I am not alone in my Opinion, that not only Bees, but all other Creatures having a Cypress Wing, are at most but Annuals. Sure we are, that most sorts of Insects fall much short of that time, many not reaching half that length, some not a Month, nay, some, according to the Opinion of that Learned and Philosophical Divine Mr. R. to the Length but of one Day. I confess, most of the World are of a quite different Opinion concerning Bees, and doubt not but they live many Years; and to this unhappy Mistake, some of the Antient Philosophers have not a little contributed, by venturing to deliver their bare Opinion to the World, without any Experience; which had they try'd, they would have been convinced of their Mistakes, and not have thus imposed them upon us: And since their Improvement doth not a little depend upon the clearing of this

this Doubt about their Age, I shall set the Matter in as clear a Light, as the Nature of the Thing will bear.

Obj. And here the Reader will suppose he hath just Reason to raise an Objection, and say, what is this to the Purpose, how long they live, or how soon they die. And how can this be so material a Point to the improving of Bees?

Ans. Yes, very much; for where-ever this vulgar Error prevails, (as it now doth in most Parts of *England*;) or whoever believes, that Bees lives many Years, that Place shall never be well stock'd with Bees, nor shall those Persons ever make any great Improvement of them, or reap any great Profit by them, because this Notion of itself doth hinder the Planting or Raising of great Bee-gardens, or encreasing their Bees to any considerable number of Colonies, or Stocks of Bees, in their Gardens or elsewhere; for, says the good Woman of the House, to whose Protection for the most part, the Bees are committed, this Stock is very good, and heavy, and would stand very well till another Year: But pray consider, it is two Years old already, and if I should let it stand another Year, the Bees will be so old, that they will not be able to labour much next Summer, and now we are sure of a good lump of Honey, that will make us a Firkin of good Mead, fit to be tap'd at *Christmas*; the Daughters approving their Mothers Politicks, thus ends the Council of War betwixt the old Woman and her two Daughters against these her industrious and laborious Servants;

and no sooner is this harsh and ungrateful Sentence pronounc'd against these Innocents, but they immediately proceed to Execution; one runs to find a Spade, to dig a Hole in the Ground; another is preparing two or three Split Sticks; a third, the fatal Brimstone Matches to put in them: Thus all things being prepar'd for an Assault of their rich, but defenceless Castle, they are taken by Storm in the Night, their City plunder'd, and their Inhabitants all slain by Fire.

*Like a rich City, strong by Nature made,
And e'ry House with richest Treasure fill'd;
No Hostile Force did e'er their Walls invade,
Till now betray'd, they now their Treasure yield,
With Life and all; no Citizen can fly;
The Brimstone Mine is sprung, headlong they fall,
Both Queen and Subjects, all in Dust do lie,
One common Grave doth now receive them all.
The Victors seize on their delicious Prey:
Here twice ten thousand Houses levell'd are.
Their sacrilegious Hands make no delay,
But streight the Regal Palace seize and tear;
The Queen is slain, her Subjects all are dead;
No Homage to her awful Palace paid.
With the sweet Prize the Conquerors are fled;
All being slain, of none they are afraid.*

Thus the poor old Woman's Bees are destroy'd by her Mistake, thinking they would grow old by the next Summer, and not be able to perform their Labour: Whereas those Bees that she then destroy'd, were as young as the Bees that were in the Hive the Year before

before, the old Bees being all dead, before she came to take that merciless Course with them; for the Bees she then kill'd, were all young Bees; and if the old Woman would have had Patience, and let them live, she would have been very well rewarded for her Virtue; for the same Hive she hath now destroy'd, would have done her as much Service every Year, as in the Year past, by encreasing the Bee-garden with greater Numbers of Stocks, as well as greater Quantities of Honey.

But well knowing that my bare Affirmation will no more pass upon my Reader, than any other Author's would upon me, I shall give him such demonstrative Arguments, as I doubt not but will be convincing, in order to remove this fatal and fundamental Error. 1. The Bees send forth, when they swarm, mix'd Numbers, not all old ones; for then must the Swarm be short liv'd indeed, for they could not live to the next Winter, much less to the next Spring, for all the old ones dying in the latter Months of the Summer, there must be an end of the Swarm; for having none left but their Young, bred since they swarm'd, they must be a Prey to Robbers in Autumn, or the first Frost in the Winter. 2. Neither are they all young Bees, for then the old Stock would not be in a better Case; for there being none left but old Bees, and those they bred after the Swarm is gone forth, the old ones going off so fast the latter end of the Summer, would leave the Hive too much unguarded against the Assaults of Robbers, or Cold; but going forth mix'd, both are preserv'd, and great Conveniences arise to them

them all manner of Ways; As *First*, in the Staller are left old sufficient Warriors to train up and well discipline the young *Amazons*, as soon as they become capable of being taught the Art of War, as well as Work, both being necessary to the being, and well-being of the Bees. *Secondly*, The Swarm hath also a sufficient Number of old ones amongst them, to teach and animate by their Example and Diligence, how to lay, not only the Foundation of their new most curious Buildings, but how to defend the same against all Opposers, and then by their Death leave the Young, Possessors of all, for generally the old Bees are dead before the Middle of *September*, but most of them before the End of *August*.

Obj. But how do you know the Old ones from the Young.

Ans. By these Signs following. The Old ones in *July*, and some of them in *June*, their Bodies begin to wither, their Wings, with continual Labour, grow ragged, and somewhat greyish; soon after which they die, some of them in the *Hive*, having their Funeral Rites perform'd by their dutiful Children, as hath been before observ'd. But many more die abroad in their beloved Calling, following their Work, till their Wings are at last worn out, that they will no longer bear the Weight of their Bodies, especially when laden with Honey; for many of them when they have been abroad to gather Honey, will recover home into the Bee-garden, and their pitching a while to rest themselves before they go into the *Hive* to unload, they can never rise more, which is the Reason, that

that about *July* and *August*, we have so many of them about the Garden; many of which I have taken up, in order to hold them in my Hand long enough to warm them sufficiently to fly home, but they flying a Yard or two, fall down again; whereas when I have taken up any of the young Bees, and thus held them in my Hand to recover them from their Chillness they have receiv'd from staying too long to rest themselves on the Ground, they, as soon as ever they are warm, fly home with all the Agility and Vigour imaginable.

But to put the matter beyond all Controversy, let any body put it to a Tryal, as I have several times, by the following Experiment.

Put a Swarm of Bees of a Peck, in *May*, into a Hive of Glass that will hold half a Bushel, and they will if it be good Weather fill it with Combs down to the Stool, in less than a Month, which will also be well stored with Honey, and some of the Combs employed from the first in breeding; so that with the Combs and Bees, the Hive will be exceeding full, that there is not room enough to contain them all in the Hive; nay sometimes they will actually swarm, tho' it is best to prevent it if possible. I say, this Hive thus full in *June*, above and below, within and without the Combs, so that the Hive cannot contain any more, nay, there is not room for all the Family within Doors, but some must hang at the Mouth of the Hive, yet this very Hive of Bees thus discribed, without any Swarming; or other visible way of diminishing them, you shall by the

the latter end of *August* see room enough in the Glass-hive to contain above twice the Number as then remain: Now if any Man can give me any other rational Account of this large Vacuity in the Glass-hive, than the gradual Dying of the old Bees that went out with the Swarm, I shall be of his Opinion, otherwise, I shall look upon this one Experiment next to a Demonstration, that the Hive daily growing thinner and thinner of Bees in *August* and *September*, is occasion'd mainly by the gradual Dying of the old Bees that were in the Swarm.

Obj. But perhaps you will say, you tell us, the Bees have many Enemies that destroy them which perhaps may be the occasion of this vast Emptiness in the Hive.

Auf. 'Tis true, they have many Enemies; and as true, by these are many of them destroy'd; but not to such a Number as to lose half, for Bees have almost as many Enemies in *May* and *June*, as in the latter Months, which kill many of them; yet notwithstanding that, the Bees, by reason of their continual Breeding, do more than supply that Defect, and fill their Hive still fuller and fuller; but it is not so in the latter Months, for as the old ones then die away by degrees, there is still more room, and more to be seen in the Glass-hive, and the only reason of this great Vacuity is, because all the old Bees which did occupy that Room are dead. I will not contend for a Month or two in their Age, and that is the most I can allow them; for tho' I account them Annuals, and am sure that it is generally the Term of their Life, yet I have been

been sometimes apt to think, that some of them that were bred in the best Months, as *May* or *June*, might continue 13 or 14 Months; but this I give only as a slight Opinion, rather (to let the Reader be satisfied, that I do not mean when I call them *Annuals*, he should understand me that there is a Necessity for every Bee to die exactly that Day Twelve-month that he came an Egg from his Parent,) than any thing else, about their Age, which is plain that they die every Year, and the Bee-stock, tho' it be of many Years standing, yet are all the Bees every Year young; so that the Case is very plain, that you need not take or destroy your Bees, with the old Woman as above, for fear they should be old, and not able to work. Since the Bees are all young ones before the time of taking them comes, all the old ones having escaped their merciless Cruelty, by a natural Death, before that time. I should not insist so much on this Particular, which to this Reader may seem an indifferent Matter whether he believes it or no, did not I know from discoursing with those that keep Bees in this Country, as well as others, that this Opinion doth so far prevail, that for this Reason little Improvement is made of them. They are led into this Mistake chiefly, by seeing that if they do let a good Stock alone, which they seldom do, they will live several Years; thinking because they are in the same Hive, that they are still the same Bees, and that all that they have bred in those Years, are gone off in swarming. But this is their grand Mistake; they only live

live many Years by Succession, the Room of the old ones dying, being always supplyed with young, I do believe that a good Stock barring Accidents, with Care may live by Succession near Twenty Years; but none that I ever heard or read of, were so sotishly ignorant, as to believe that Bees could live that Age, any otherwise than by Succession, no more than when we say such or such an Honourable Family hath liv'd in this or that Antient Seat Four or Five Hundred Years, we do not mean the very Persons that are now to be found there, are Four or Five Hundred Years old; no, we mean that the Family hath liv'd there, and enjoy'd that Estate so long a Term of Years by Succession; the Father often by Death, making way for the Son to inherit the Estate in that time. Thus the Bees may live many Years in the same Hive, and prosper well, and every Year increase the Number of Stocks by good Swarms, notwithstanding the Old Woman's fatal Suspicion to the contrary.

C H A P. IV.

Of the Bees Enemies, and their Remedies.

HERE give me leave to tell you the Bee is a very peaceable Creature, living in great Quiet, and by her unwearied Labours, taking the necessary Care of her own House, and will not assault either Man or Beast anywhere but at home; and then too it is

In Defence of their beloved Queen, their Young, and their common Treasure, which must subsist them all: Nay, so unapt is she to use her Spear, (on any other Account but her Loyal and Maternal Affection,) that you cannot force one of them, when in the Field gathering Honey, to sting you, she will take all private Affronts, you may beat her from Flower to Flower, do what you can to molest and hinder her in her work, she will take all, without in the least attempting to revenge her own Quarrel, is in all things patient, unless you disturb or come within the limited Bounds of the Palace and Person of her Royal Mistress, then indeed she will exert her utmost Courage, and to the Hazard of her Life, nay, often to the Loss of it; make you, to your Smart, know your Error: Yet have they many Enemies, some for one reason, some for another, which prove very destructive to these our faithful Servants. And here I shall treat of the chief that I have observ'd of them, with Directions for the Preservation of the Bees against them.

First, The first I shall take notice of, is the Mouse; this is a pernicious Enemy, and many Hundreds, (I know not but I may say Thousands of Hives) are by this Creature destroy'd, every Year in *England*.

They are safe all the Summer when the Bees are in Vigour, from these kind of Vermin, but in Autumn, when the Hives grow more empty, by the Death of the old Bees, and also growing more torpid and dull, as cold Weather comes on, then the Mouse will venture in at the Mouth of the Hive, and first they will gnaw the lower-most

most part of the Comb, where there is but herd and there a little Honey, but growing more bold as the Weather grows cold, and the Bees more still, they ascend up into the Hive, and seize on those Combs which are next to the Sides of the Hive, where commonly the richest Treasure lies, they eat Holes thro' them, and so come and go thro' them at their Pleasure, or when press'd by any Necessity, to the Damage, as well as Disturbance of the Bees; so that the first warm Day that comes, that the Bees stir about the Hive, and examine all Quarters, they find their Honey partly eat, their Combs broken, and partly set a running; the Smell of which exposes them to new Enemies, I mean the Bees of other Stocks smelling the fresh Honey, which come in like Thieves, when a Neighbour's House is on Fire, not to help the Distressed, but to plunder them of their remaining Goods, and tho' the Stock were able well enough to defend themselves against these second sort of Enemies, yet conceiving a Distaste against their Hive, by reason of the detestable Smell of the Mice, they take a warm Day and fly all away together, tho' they had as good have staid at home; for according to our vulgar Proverb, they leap out of the Frying-Pan into the Fire; let them go where they will, they must all perish; for if they go to a hollow Tree, or an empty Hive, 'tis a wrong time of the Year to begin House-keeping. I have known thro' such a Distaste and Disturbance, the Bees have gone all away, and left some Quarts of Honey bebind them.

Sometimes

Sometimes the Mouse will take another Method, and shelter himself betwixt the Hackle and the Hive, and there will make his Nest, and at length eat a Hole thro' the Crown of the Straw Hiye, and so break bulk with his Teeth that way to the Honey.

Now those that keep Bees in Houses, cannot be hurt this way by the Mouse, because there is no stay for him to make his Nest upon the Crown of a naked Hive, but in the former way, those in Houses are as much expos'd, if not more, to the Mouse, than those on single Stools. I had almost forgot a former Experiment, which I made about ten or twelve Years since, and which I think is fit to come in here. Being at the House of my Friend Mr. Bowyer of Celsdon, (about Two Miles distant from Croydon where I live,) and talking about his Bees, I went out to see what Condition they were in, where I found a Hive which they suppos'd had been a good Stock of Bees, but lifting it a little, I found it very light, then turning it quite up, I found it full of Combs, but no Bees; and the Enemy that had driven the poor Bees away, had taken Possession of their Castle for his own; the Mouse being somewhat affrighted at my rough handling of the Hive, leap'd two or three times about the Hive, but instead of bolting out against me, retir'd back to the Crown of the Hive for his own Safety, and being a profess'd Enemy to all Creatures of what kind soever that are Enemies to the Bees, and call'd some of the Family to my Assistance, I knock'd him out on one of the Grass Plats in the Garden, and there we destroy'd the Destroyer;

stroyer; indeed I was the more careful in that Execution, lest he that had already tasted of those forbidden Sweets, (as it often happens with Creatures of a higher Dignity,) flush'd with Success should break into other Hives, and in time might have endanger'd all the Stocks in the Garden.

The Remedy.

AS to those that keep Bees on single Stools, (which is the way generally in *Hampshire*, and other Parts of the West of *England*) and so consequently must hive Hackles over them.

1. **H**ave no Swarms in Hives that are very old; for the Mice cannot so easily make their way, if at all, through the Crown of a new Hive, as they can where the Straw of the Hive, through Age, is almost rotten.

2. **P**ut a good large Flint Stone on the Top of your Hive, betwixt the Hackle and the Hive; which, by its Coldness and Unfitness for that Purpose, will hinder the Mouse from making his Nest there. But however the good Bee Mistress ought to examine the Case of every Hive, by taking off the Hackle, at least once in every Month, lest (especially in the Months of *March* and *April*) the Mouse break in upon you, and destroy the Brood or young Bees, and the Sandarach, or Bee-bread, both which they are extremely greedy of as their Food, if not more than of Honey. I have had more than one Experiment of this Matter, where the young Brood hath been eaten by the Mice, and the Honey left. But where

there

there is one Hive destroy'd by breaking it open at the Crown, I believe there are an Hundred by their entring in at the Mouth of the Hive; and so the good Woman is disappointed when the Spring comes: She is sure she left none but what were heavy and in good Condition, and able to stand over the Year, as their Phrase is; but in this Hive and that, there is neither Honey nor Bees, but only empty Combs, and can no way account for the Loss of them. But if you would take Notice when you take up such dead Hives, of their Combs, how the uppermost Parts of them are gnaw'd, and many rough Holes in the Middle of the Combs, the Doubt would be soon clear'd how they came to miscarry.

3. As to the Mouse entring at the Mouth of the Hive, it is occasion'd by an ill Custom, which I find all over this Country, to cut a deep Gash thro' one of the Rounds of Straw, about an Inch and an half high, and as much in breadth; which Mistake, instead of keeping the Mouse out of the Hive, will let in two at a time. Now the way to remedy this, is not to leave room enough for a Mouse to enter; then shall you be secure from this pernicious Enemy: When you have bought a new Hive, first try him upon the Stool whilst empty, where you design to set your Swarm, whether your Hive have not a HOLLOWNESS some where or other in the Skirt, deep enough for Bees to go in and out at, for there are but few so exactly made, but such a HOLLOWNESS may be found in the Skirt deep enough for that Purpose; if so, 'tis very well, your Work is done

to your Hand without cutting, only mark that Side where the Hollowness is, that when your Bees are hiv'd, you may know which Side of the Hive to turn outward: This Hollowness must be almost half an Inch high; if it should be much shallower, the Drones, or Male-Bees could not pass in and out; and if it should be but a little above half an Inch, the Mouse will invade them. But if you have no such Hollowness in the Skirt of the Hive, then you have the Choice of three Ways to make it: Cut a Notch in your Straw-hive, not through the Roundal as before, but somewhat less, or at least not more than half an Inch in depth, and 4 Inches in length, that they may have room enough to pass in and out by one another, and not hinder their Labours. Or thus; Lay two small bits of a Tobacco-pipe on the fore-part of your Stool, and then set the fore-part of the Hive on them, so will your Hive be rais'd at what height you please, by the Bigness or Smallness of the Pieces of Pipe; then with Lime and Hair, plaster up all but 4 Inches in the Front, for the Bees to play in and out at. And this latter Way I must approve of before the former. But the best Way of all, for those that keep Bees in Straw-hives, and will be at the Charge of it, is to send your Hives all to the Cooper, and let him set a narrow Hoop of an Inch, to every Hive, by drilling Holes thro' the Edge of the Hoop, and so driving wooden Pins, like Skewers, so that they may drive two or three Inches into the Skirt of the Straw-hive, and it will be very fast, and then you may at your own Leisure and

and Pleasure, cut a Notch almost half an Inch high, and four Inches broad, as before: But if you are forc'd to use any of your old Hives, that have already those deep Notches cut in them, turn the Notch to one Side, and fill it up with Lime and Hair, and follow the former Directions. But however, it may not be amiss to set a Mouse-trap in every Bee-house, according to the Advice of the famous Dr. Butler; for tho' they cannot get into your Hives, and so can do you no great damage, yet if they harbour about the Bee-house they are an Offence to the Bees. Suffer no long Grass or any thing else, about the Bee-house, that is likely to harbour Mice.

2. The Moth is also their Enemy; I mean the winged Moth; which doth convey his Eggs under the Skirts of the Hive, where being preserv'd from Cold, by the Heat of the Bees, they become a very large grey Maggot: I have seen some of them exceed an Inch in length, and doth much perplex, offend, and hinder the Bees; for tho' if the Bees are very lusty, they will hale them out, as they come forth from under into the Hive, as I have often seen three or four, joyning their Forces together, till they have got him clear of the Hive, fly away with him as far as they can; yet if the Stock of Bees are but weak, these many times will keep them so, and at last encreasing in Numbers, breed on the Stool under the Hive, and at last go into the Combs, and breed on that Side where there are fewest Bees; and if the Decease be so far advanc'd, there is no Cure, they will either fly away, or dwindle

to nothing: You had best take them, while they have something. To prevent this Mischief, let every Hive be carefully plaister'd all round the Skirt of the Hive, to the Board of the Stool or House, with a little well temper'd fine Lime and Hair, with a smooth Knife; so will there not be room for the Moths to get under the Skirts of the Hive, to lay their Eggs. But you should, notwithstanding this Precaution, take Care and examine all the weak Hives, in *March* and *September*, by taking them up gently in your Hand, and set them down softly by, leaving the Place open where they stood; so with a Wing or course Cloth, rub away the Maggots if there be any, or any other Filth, dead Bees, Pieces of Combs, &c. and then softly put them down in their Place again; so have you done your poor Bees a good Kindness, saved them much Labour, and done your self no harm.

The Earwig is also a pernicious and very offensive Enemy to the Bees, and lay their Young in the same Manner as the Moth, under the Skirt of the Hive, and in little Crannies about the Mouth of the Hive; and often they make very bold with them, (their Coat being Armour of Proof, against the Spear of the Bee) and entring in at the Mouth, or any other Place underneath the Skirt, if there be room, they lay their Eggs on the Stool, and in poor Hives ascend even to the Combs themselves. The Remedy is the same as with the Moth before spoken of, and at the same time of the Year; so that when you search for the Moth's Young, you cannot miss

at the same time, to meet with the young Maggots bred of the Earwig, which are much like them.

The Hornet is to the Bees, as a Bird of Prey is to the small Birds: I never saw one of them venture into the Hive for Honey; but he will seize on a single Bee, on or near the Mouth of the Hive, and like a Hawk carry her away in his Claws, and eat her. But of the Hornet there cometh no great Mischief; however, the best Way is to kill them, if you find any hankering about your Bees; which is not hard to do, they being but slow of Motion; or spoil their Nests if you hear of any near you.

The Wasp is a more dangerous Enemy if they come to be numerous, as in dry Summers they are; but frequent Rains doth much hinder their encrease, by chilling their Brood, and wetting their Combs, and sometimes drowning their whole Nest of both old and young together. They do little harm in *May* and *June*, indeed they will come about the Hive, but hardly ever attempt to go in, but pitch on the Ground, and seize on any dead Bee they can find, tearing her like a Vulture, eat a Part of her and then fly away with the rest of their Prey: But in *June* and *July*, they are both older and bolder, and will venture into the Hive to rob and steal; but their Fools Coat, and hoarse Voice, doth soon discover them, and seizing upon them, two or three at a time, they down with her Hou'e, and lay their fine Feathers in the Dust; tho' you shall see, that sometimes they will break away, tho' two

or three have hold of them, being much stronger than a single Bee, and so will make their Escape; for now all the Stocks keep diligent watch and ward at the Porch of their House, and 'tis no easy matter for a Wasp to pass in without being examin'd by their Sentinels; but they being eager of Honey, are bold Intruders, and will venture in, tho' they come short home, but if once they get frequent Admittance, as they often will in weak Stocks, (their Guard at the Door being but slender) they will never leave them, but daily augmenting their Forces, they will break open the sealed Combs, after which, the other Bees will, upon the smelling the fresh Honey, come in, and share the Spoil with them, which you may always know; for by lifting up the Hive in the Evening, you will see abundance of small bits of Wax fallen down to the Stool; and about the Mouth of the Hive, not unlike the Saw-dust of Deal-boards, and the only way left then, is to take them; the Remedy prescrib'd by Dr. *Butler* to prevent this Mischief, is to set Bottles with Verjuice, Beer, &c. in the Bee-house, or Pots cover'd with Paper, with a small Hole in the Middle, which will catch many of them.

But here I must crave leave to differ from the Doctor, for the Smell of those Liquors will draw more Wasps to you than otherwise you would have had; and tho' I must agree with the Doctor that many will be entrap'd, yet I have found by long Experience, that those Bees have escaped these Enemies most, that have had none of these Traps, which I can attribute to nothing but their being drawn together

ther by the Smell of the aforesaid Liquors. Now the best Way is to lessen the Number of these Wasps, and that is by destroying those large ones that you shall often see in *May*, (but never appear but one at a time) every one of these being a Mother Wasp, and carries a Nest about her, so that you destroy as many Nests as Wasps; but some of these must escape, and will make a Nest and breed many; therefore whenever you hear of a Nest in your Neighbourhood, be careful to destroy them, by scalding Water, or digging them in, and tread the Ground in hard upon them, or if in a Tree, with Brimstone Matches let them be destroy'd.

The Swallow is a great destroyer of Bees, and doth catch them flying, and eat them, and convey them to her young ones, for which I know no Remedy; but however, destroy their Nests in the Chimneys, and your Loss will be the less.

There is yet another Enemy which passes almost unsuspected, which doth destroy abundance of Bees, and that is the Sparrow, especially in their Breeding time: The manner of seizing their Prey is thus; they come hopping on the Ground before your Bees, and if they find none pitch'd on the Ground, they jump up, and take them flying, and away to the Nest with it, and come and fetch another. Indeed all the time of their having young ones, both Young and Old have their Living mainly upon Bees; the best Way to prevent, at least a good Part of this Mischief, is to encourage Boys in the Spring time to spoil their

their Nests, and for now and then a few Farthings to the Boys, you may have all the Nests near you destroy'd.

C H A P. V.

Of the QUEEN BEE, and the Loyalty of her Subjects.

AND here as Princes ought to be treated of with all Respect imaginable, so ought we also on the other hand to take care so far to avoid Flattery, as not to suffer any thing to escape the Pen, which will not hold out full weight in the Ballance of Truth: And here a great Discouragement falls heavy upon me, my Pen seems to move slowly, not that there wants Flax on the Distaff to maintain the Thread, but only the Consideration, that the Excellency of my present Subject is such, that instead of moving Admiration, I despair of gaining Belief; but be it as it will, I shall go on with the Truth of my Observations.

The Queen-bee then, I think is of all Insects the most glorious; her Body is bigger a great deal than the Honey-bee, and very much longer; yet her Wings are no longer than that of the Honey-bee, which shews, that she is not design'd by Nature for Labour, nor long Flights, which is the continual Business of her Subjects: As to her Shape and Colour, her upper Parts are of a lighter brown than the rest, having the Resemblance of a Velvet Cape, or Fur Gorget about her Shoulders; her hinder-

part

part from the Waste, (which is very small) as it is much longer than the Drone, or the Honey-bee, so she is much more taper than they ; and whereas the Drone and common Bee are brown all over the hinder-part, the Queen in that part is as black as Jet, or polish'd black Marble ; and whereas the two great Legs of the Commons, are quite black, hers are as yellow as Gold, as alfo is all along the under part of her Belly. In short, the Queen doth as far surpass her Subjects in Shape and Beauty, as the finest Horse that ever ran on *Banstead Downs*, doth the most common Forrester : And as she doth so much differ from her Subjects in Shape and Beauty, so she also differs from them in her Breeding. *First*, The Egg of her Royal Mother, which Egg is cast into a Royal Cell or Matrix, made by her Vassals for that very purpose, in a different Form from all the rest, (which are Mathematically Six Square) and is most exactly round, very much thicker in Wax, and the Cell proportionable to her Body, much larger than those the common Bees make for themselves ; but this round and Royal Palace is never in a Comb amongst other Cells, but always by itself, and raised from a large Foundation, either from the flat of a Comb, or sometimes on the edge of a Comb, for I have often seen both ; but when this Regal Mansion is built on the edge of a Comb, then is that Comb divided for that purpose, and is always about the middle of the Hive ; and instead of this middle Comb running thro' entire as the rest, it is divided into Two Combs, and hath two Edges, in the middle

middle Edge of which, this round Cell is built, always leaving Room for her Attendants to come round her ; there is always one in every Hive of these Palaces, in some Two, and in some I have seen Three, but this is seldom to be seen. As to her Power, the Grand Seignior with all his Janizaries about him, ready to execute his most hazardous Commands, or the (nearer home) King of Slaves, is not half so absolute as the *Queen of the Bees* ; and this her absolute Power over the rest, is not procured by any Tyranny or Cruelty by her exercised over her Subjects, but from an innate Loyalty natural to these Creatures, not to be diverted by Envy nor Faction, towards this their lawful Sovereign.

Oh, that all the Thousands of this *Britannick Israel* were but so Loyal to our Most Gracious King ~~of~~ *George*, who by all the Sacred Ties of Law and Nature, hath an undoubted Right to ; and by His boundless Clemency and Goodness, doth in the highest manner deserve our utmost Loyalty : Where *Britons*, where is your boasted Loyalty, that the very Insects of your Country shall reprove you ? Whilst they join their Forces together with an undivided Fidelity, against all that dare presume to invade either the Crown, or Territories of their *Queen King* ? You degenerate too often into Faction, the very Seeds of Rebellion, which hath hurried you blindly on, even once to the dipping your sacrilegious Hands in the Blood of your Sovereign. But to stay no longer on this melancholy Digression, in hopes the Fidelity, Courage, and Loyalty of my Bees may teach

you your Duty, I shall proceed. All is done by her Command, as Working, Fighting, Swarming; there being as much Inclination to Obedience in the Subjects, as in their Queen to Command: But you will say, how can you know all this? To which I answer, that none that have been so long Conversant with Bees as I have, and made but tolerable Observations, must be fully satisfy'd in the Premises by ocular Demonstration. But if you would know how I came to know the Nature of this Monarchy, take these few Observations following.

First, Many Years ago I having a mind to satisfy my Curiosity about the Queen-bee, was resolved to run the hazard, at least of destroying a Swarm of Bees for that purpose, so in the Morning, about half an Hour before Sun-rising, I took a Swarm of Bees that had been hiv'd the Morning before, and carrying it into a Meadow joining to my Garden, ~~and~~ shook the Bees all out in a Lump upon the Grass, and as soon as they were a little quiet from the Disturbance that so violent a Motion caus'd, I laid my self down on the Ground, and with a little Stick in my Hand, gently stirr'd the Bees, in order to find the Queen-bee, and having describ'd her to Three or Four of my Family which were then with me, desir'd them, as I stirr'd the Bees, if any of them saw such a Bee, to shew her me; all being thus upon the search, at length one of them discover'd her, and pointing to her, I saw her, and quickly caught her in a Box which I had ready for that purpose; and carried her into my Parlour, where

where opening my Box, I let her fly, and a few of the other Bees who were taken with her, who, as is natural to them, did fly against the Glass Window, so taking a sharp pair of Scissars, I cut off one of her Wings to disable her from flying, and then put her again into my Box. The first thing I was willing to know, was, what they would do without their Queen, but this was soon discover'd, for they were in a Quarter of an Hour like Sheep without a Shepherd, (which was as soon as the whole Bunch could know that the Queen was not amongst them,) which they soon discover'd, by spreading themselves abroad upon the Grass; for, whereas 'tis natural to these Creatures to keep close together like a Bunch of Grapes, they now spread themselves as broad as a Cart-Wheel, running up and down, and with a pitteous and discontented Note, searching for their Queen. So when they had spent an Hour, or thereabout in this fruitless Search, they took Wing, and flew to a Hedge, and their pitch'd, in which Flight and Pitching, there were Two Things remarkable. *First*, That they flew to the same Hedge where the Swarm had pitch'd the Day before, to search for her there, where they last had her Company. *Secondly*, How soon by the Absence of one Bee, this Monarchy was turn'd into Anarchy; for now (instead of going altogether in a Bunch, which is natural to them when they have their Queen,) they were divided all along the Hedge for Ten Yards together, in little Bunches, 40 or 50 in a Bunch, and some larger Bunches; so then I pull'd the Box out of my Pocket, where the Queen-

Queen-bee was, being willing to know whether or no they would again acknowledge their Crippled Sovereign, and my Thoughts then were, that they would not, she having been so long from them, and her Wing cut off, or the Smell of the Box, I did not know but these, or some of these, might give them some Distaste ; but to my great Amazement, and all that were with me, I no sooner open'd the Box, and laid it, Queen and all on the Bank, near to one of these little Bunches, but they immediately began to gather from hither and thither all about my Box, where the Queen was, which was soon cover'd up, and in less than a quarter of an Hour, they were all gather'd together about their Queen, rejoicing ; which Rejoycing is easy to perceive by those that are used among them, by their Notes. So having found their Queen again, they lay all contented together, not running up and down, and spreading themselves as before, when she was absent. So Night coming on, I again hid them, and brought them into my Garden, for if I had let them remain abroad all Night, the Coldness of the Night would have chill'd them ; so that I should not have been able to make any farther Discoveries with them. Next Morning, being fine Weather, I again knock'd them out on the Grass, in the Meadow as before, where they soon united themselves together about their beloved Queen, where I let them lie for some Hours, to try if they would rise, but here was the height of Loyalty express'd. The poor Queen, as I told you above, had one of her Wings clipt, and so was not able to fly, and lead

lead them off to some Place for their common Preservation, and these her Loyal Subjects chose rather to perish with her, than to leave her in her Distress. Then I again took away their Queen, and put her in a Box as before, and my poor Bees fell again to spreading themselves in search of her ; so when they were thus spread abroad, I laid down their Queen near one side of this searching Squadron, when to my great Satisfaction, and Wonder of some Friends, which I had sent for on purpose, they all immediately ceas'd their spreading themselves, and searching every way for their Queen, they all march'd directly towards her ; before they had quite cover'd her, to save my self the Trouble of searching for her in the midst of the Swarm, I took her up and laid her down on the contrary Side to where I took her up, when presently you might see them all turn their March to her again ; so I often took her up from one Place, and laid her down in another, and these poor loyal and loving Creatures always marching and counter-marching every Way as the Queen was laid : When I had shew'd my Friends all the Diversion that so great a Curiosity could afford them, I suffer'd them again to encircle her, and immediately they closed from the right and left, Front and Rear, into a thick round Bunch, no broader than the Crown of my Hat, and so lay very well contented together, the Commons still expecting when they should fly with their Queen as usual ; but she not being able to fly, could not lead them off, and not a Bee of them would offer to leave her, tho' by this time, no doubt but

but they began to want Food ; so the Evening drawing on, I again hiv'd them, and brought them into my Garden, to prevent their being chill'd, and the next Morning knock'd them out again upon the Grass, where, to try farther Experiments, I often took away their Queen, and with her could march them any where, this way and that way, and then put her to them again, for I was resolv'd now to try whether or no these Loyal Creatures would go on thus to the end, and crown these their Loyal Principles with Martyrdom : The Commons tasted no Food, nor would they fly to get any, unless their Queen had been in Safety. And indeed this their Loyalty and Affection was equall'd, if not outdone by their Queen ; for when I had her away from them, I gave her Honey several Times, but she would not so much as once taste of it without her Subjects. But to come to a Conclusion of this curious, tho' melancholy Observation, they still kept their Integrity, and Famine it self could not lessen their Loyal Affection to their Prince ; for after they had liv'd five Days and five Nights without the least Food, they all died by Famine, except the Queen-bee, who liv'd some few Hours longer than her Subjects, and then dy'd ; disdaining a Life that was no Life to her, without the Company of those which she could not have, they having all given up their Lives for her Sake.

*Surprizing was the Sight,
And rarely to be seen,
Such Loyalty in Subjects,
Or Goodness in a Queen.*

*I challenge all the World,
England except, to find
A People half so Loyal,
Or Princess half so kind.*

I think this one Relation of Matter of Fact, to be sufficient to prove all that I have before asserted ; yet I shall give you one or two more in this Place, besides others that must unavoidably come in, in their proper Places in this Tract.

Secondly, I have often put two Swarms together, to make the Numbers sufficient for one of my large Boxes. The Manner of which is describ'd in the Chapter of Swarming. Every Swarm hath a Queen-bee among them, and when the second Swarm comes to be added to the first, this is plain Matter of Fact, that always the first Night one of these Potentates is slain, or expell'd the Hive. It is here as with *Cæsar* and *Pompey*, one would admit of no Superior, and the other of no Equal. For the most part one of them is thrown out dead under the Hive.

Obj. But you will say, where is the Loyalty of these Creatures you spoke of, when here is a Queen slain by them ?

Ans. This makes not against, but much for the Monarchy of the Prince, and Loyalty of the Commons ; for here is a Swarm with their

Queen

Queen settled, it may be a Week or more in the Box, before the second Swarm invades these her rightful and lawful Territories ; Dispatches of Guards are sent from the first Disturbance given, to examine into the Cause of that Disturbance in the Hive, who finding there is a Pretender to her Crown and Dominions, immediately seize and dispatch the invading Prince, and a Pardon is granted to all her Subjects, who now become one numerous Family. Sometimes in this Bustle I have known the Second Queen creep off wounded, and have found her either on the Bee-stool, or on the Ground, but always with her Guard, who never leave her till she is dead, (which Guard is about 100, more or less, according to the Bigness of the Swarm,) all clinging so fast about her, to keep and preserve her from Peril, that it has been difficult for me to part them with Skewers, or such like Utensils ; and always when I find such a Lump of Bees, I know there is the Queen in the Middle of them, and accordingly call my Family out, or any others that may happen to be within, to see this glorious Insect. So taking her away from them, I put her Guard to their Fellows, who are readily receiv'd into Grace, and made free Denisons of the Colony ; for coming without any Leader, there is no Opposition, knowing by natural Instinct, that the greater their Numbers are, the better they are able to provide for, and defend themselves.

C H A P. VI.

Of Swarming, and the Reasons why; and Hiving the Swarm.

THE two Swarming Months generally are *May* and *June*, tho' there are sometimes Swarms in *April*, and very often in *July*. Those in *April* are in great danger (if cold Weather should follow their Swarming) to be starved, before they can get any thing to begin House-keeping withal. Those that swarm in *July*, tho' they are in no danger of any sudden Want, Honey gathering being then plenty everywhere, yet are they in great danger in the Winter following, for fear, least having so short a summer of it, they should not have gathered Honey enough to serve them till the next Spring.

The Reason of their Swarming, is for want of Room in the Hive; for when they have bred so many that the Hive will not contain them, then, after they have lain out a while in a large Bunch at the Mouth of the Hive, in a fine warm Day generally they Swarm; but as there is no General Rule without an Exception, so here you will sometimes find they will not Swarm, tho' they are very full, and lay out with a Bunch of Bees at the Mouth of the Hive as big as your Head, and this they do for a Month together, tho' the Weather prove never so Favourable and will not Swarm. The Reason is, there is no Prince ready to go

go forth with the Swarm ; some Accident or other hath happened to the Royal Brood within, and they will rather never Swarm at all, than go off without their beloved Governess.

The best time for Hiving your Swarm, is presently as soon as they are most of them pitch'd ; and this Way commonly prevents their flying away : For you must note, that the Bees are always provided of a Place, which they design for their Habitation before they Swarm: either in some hollow Tree, or in the hollow part of some old Building, or in some Hive, perhaps a Mile or two distant from you, where other Bees have died, and left their Combs ; which the Swarm have already provided, by cleansing out all the Filth, or the Dead Bees, or whatever else may be offensive to their cleanly Nature ; and they only pitch on the Tree near you, to gather all together, that they may go a way together to their prepared House. I have had a strange Swarm of Bees come into my Garden, and fly directly into a Hive of old Combs, which they had been every Day at work upon, to cleanse and make fit for them for fourteen Days before ; every Day about an Hundred or more hard at work, pulling out and clearing the Hive of Dead Bees, old Sandarach, and Moths ; and when quite clean, as I expected, the Swarm came, and went into their thus prepared House, But however, tho' they always provide themselves of a House before they Swarm, and take much pains about it,

yet if you are early enough in your taking the Swarm, and your Hive be clean, and not too old, they finding themselves at unawares in a convenient House, have no mind generally to leave it ; tho' sometimes they will, and give you a great deal of Trouble, and lose them at last : But if they rise again out of your Hive, either the same Day or the next, as sometimes they will, and pitch again on a Tree near you ; then besur hive them not in the same Hive, for 'tis plain, they had some dislike of it. The manner of taking them into your Hive is various, according to the pitching of the Swarm : If your Swarm pitch upon a Tree that is pretty high, and be upon a single Bough, then the best Way to take them, is with a very sharp Knife to cut off the Twig gently, else you will scatter the Bees, and lay it down on a Napkin under that very Tree they were cut from, or as near it as you can, and gently set your Hive over it ; so will they undisturb'd crawl up and hive themselves ; so that you have nothing more to do, than in the Evening to remove them to their Place. But the general way of hiving them, is to hold the Hive under them, and shake them in, and having a Napkin and a Stick to keep up one side of the Hiye, set them down on it ; but let it be under the same Tree always, that the Bees that hanker about it (which they will always do, more or less) may be within hearing of the Swarm, and so go down to them, which they will naturally do ; but if you set down the Swarm at any great Distance from the Place where they pitch'd, many will be lost, or at least

least return home again, which will be a lessening of the Swarm : But if the Swarm part, and pitch part of them on one Tree, and part on another, (as sometimes they will) that you may not be at a Loss what to do in such a Case, take the Directions following. Hive the two Parcels in two several Hives, and then let them stand within hearing of one another, and 'tis very likely that before Night comes they will save you any farther trouble, by going all into that Hive where their Queen is, but if they do not, then about ten a clock at Night proceed with them, as in this and the following Pages shall be taught, how to joyn two Casts or small Swarms into one. I shall not dwell long on this Subject, because almost every Body doth already understand how to hive them, one way or other ; and it matters not much, whether they are cut down, or shaken into the Hive, if they stay quietly there, : Only here I must not omit to direct you about managing of the Casts, or second Swarms : (which, as they are commonly order'd, come to little or no Profit) Now there is not, as I think, scarcely one Cast in twenty, that will gather enough Honey to keep them till the next Spring ; so that they are generally taken up at taking time, with the old Stocks, but they have so little Honey in them, that they turn to no account ; now the Way to make something of them, is thus, (and pray believe me, for it will be to your great Advantage) put two or three of these Casts together into one Hive, and so they will become a good Stock, perhaps as good as any one of your Swarms, and stand over

the Year very well ; the Manner how to perform this seeming difficult Work, is very easie when known, which here shall be faithfully taught ; When you have a Cast or second Swarm, take it into the Hive, as you do the Swarms, and put it in its place ; then perhaps two or three Days after, or a Week, you may have another Cast, up and pitch'd ; let this second Cast be hiv'd by it self also in an empty Hive, and set under the Tree where it pitch'd, as before, till Night ; then you must put this second Cast to the first, thus : Spread a Napkin, about ten a clock at Night, on the Ground, close by the Stool of the first Cast, then lay a Stick cross the Napkin, then fetch your second Cast, that swarmed that Day, and with a strong Stroke on the Stick which lies cross the Napkin, knock out all the Bees, which come all out at that one Stroke upon the Napkin, in a broad Lump ; then, throwing the Hive out of your Hand, take your first Cast off from the Stool, and set over the Bees on the Napkin, so will they, in about an Hour, all crawl up, and become one Family : If any of them, as sometimes they will, hang about the outsides of the Hive, let them with a Wing be brush'd off upon the Napkin, and they will soon go to their Fellows ; so about eleven or twelve a Clock, take up the Hive, and put it in its place ; so have you two Casts in one Hive : In the same Manner you may put a Third and a Fourth, and so you may have a strong Hive of Bees for the next Year ; for if they are in small Parcels, they can do no good, for out of so small a Parcel as one Cast, when

when all their Offices are provided for, there are so few to gather Honey, that little can be done; some must be appointed to keep the Brood warm, in order to breeding, some to keep Court with the *Queen*, some to keep Guard at the Mouth of the Hive, to keep away Thieves. But when by this Means of doubling the Casts, you have augmented your Numbers, they will have to spare to supply every Occasion, and sufficient to gather Honey for the Family, stand all the Winter, and swarm the next Spring as well as any of the other Stocks; the greater Quantities of Bees there are together, the better they are able to provide for themselves; my Meaning is, that one Peck of Bees in one Hive, will get much more Honey than two half Pecks will do in two Hives. The Reason why we put them together in the Evening or so late, is because by this Means we prevent two great Inconveniences. *First*, If it were in the Day, and they finding such a Disturbance in the Hive, tho' the first Swarm that was at home, and had made some Works, would, 'tis probable, stand its Ground, yet 'tis very likely the second would rise again, and perhaps fly quite away; whereas, being in the Night, they cannot rise, but all Night crawling one among another, they are united into one Monarchy, under one *Queen*, for they dispatch the *Queen* of the second Cast most commonly before the next Morning, and cast her out, tho' not always dead: Sometimes I have found her on the Ground alive, but never without her Guards about her, about two or three Hundred,

more

more or less, according to the bigness of the Cast she belong'd to, which Guard *De Corps* never leave her till she is dead; for tho' the whole Swarm is confus'd with the other, yet these, whose immediate Business it was at that time to guard their Sovereign, are so faithful in discharging of that Trust, that they venture their own Lives for her Safety; and tho' on the Ground with their Queen in the Night, in danger of being chill'd to Death, yet to preserve their Sovereign from Cold or Danger, they all cling so close about her, that they seem to be one entire Creature, and 'tis with some Difficulty that I have got them apart, to save the Bees, and put them to their Fellows, which you may easily do when you have got away the Queen, but not before.

But *Secondly*, If you would put two Swarms or Casts together in the Day time, you will see the most dreadful Battle betwixt them, that is possible to be conceiv'd, to the great Danger of both Swarms or Casts; for they will never give over fighting in the Hive and out of the Hive, till one of the Queens is kill'd, and perhaps not then neither; for many of these small Warriors will not presently know that the other Queen is dead, and so will keep on fighting to death for their own Queen; for till the Queen of the Hive doth come to know it, and cause the Retreat to be sounded in her Camp, there is no giving over fighting; but then admitting all the Subjects of the slain Queen to grace, they become one Family. But this great Hazard, Mischief, and the

the Loss of so many Bees as must fall in the Battel, is prevented by doing this Business at Night.

Many are the ways that Country People have of Dressing the Hive before they put the Bees into it; some with strong Beer, others with Water and Salt, others with rubbing the inside of the Hive with Fennel, some with Bawm; but the best way, if you will do any thing to the Hive at all (for they will like it well enough as it is if it be clean) is to rub it very hard all over with a coarse Cloth, to get off the loose Straws, or any thing else that will come off with rubbing, and then with a little Water and Honey let the Hive be rubbed only in the upper part, which may make them the more willing to ascend. The Reason why you rub and cleanse the Hive very well before you put the Swarm in it, is to save these cleanly Creatures a great deal of Labour, which else they must take to clean it; nay, when you have done what you can for them this way, they will have much Work to do, before they will think it fit for their dwelling, as appears, if you take notice of the Place where the Hive stood with the Swarm on the Napkin the first Day, there you will see abundance of short bits of Straw gnaw'd off by the Bees (that stood out in their way) with their Fangs; and if you will lay your Ear to the Hive any time of the Night after they swarm'd, you shall hear them very busy about this Work all Night long.

C H A P. VII.

Of Feeding the Bees.

THIS one Chapter, if minded, would do the good Bee-Mistresses great Service, for there is nothing that they are so ignorant in, as in this matter ; and I verily, believe, in their way, they kill more Bees than they preserve, and that there is not one in twenty that they feed, that comes to see the next *May*. They have several ways of feeding their Bees, the most general way, is to take two or three hollow Kexes, and cut them along through the middle, and so fill the shallow Gutters with Honey or Sugar, and put them in at the mouth of the Hive in hard Weather, and let them remain till empty, and then fill them again, and so on. Now this is a most pernicious way for two Reasons: *First*, for the manner; if you would feed your Bees, 'tis to no purpose to put in such small quantities, which may do them harm, but can do them no good ; for if the Bees come down in the cold Weather to feed, they will be so chill'd, that scarce half of them will recover up into their Combs again: *But, Secondly*, 'tis a wrong time, the Winter not being the Season (by any means) for that Business ; twice a Year you ought to examine all your Hives or Colonies, that is, in *September* and *April*, but chiefly in *September*, that being the most proper Month ; and when you have examined all by lifting them up, you will

will easily know which of them lack Feeding: Those that you have reason to think weigh twenty Pounds and upward, need none of your Help; but if you want Bees and find some Stocks poor in Honey, but full of Bees in *September*, then you must consider how much they stand in need of to keep them till next Spring, and then give it them either altogether in a large Dish, or every Day a large Plate full, till you have given them their full quantity. The manner of Feeding them is thus carefully to be observed: *First*, prepare your Honey thus, Take six Pounds of Honey, and a Pint of Water, and set it over the Fire to melt; and when it is well melted and mixed together, then pour it out into your Dish, or Plates; and when cold, put it under your Bees thus, If it be only a Plate which will hold about a Pound, then with three or four pieces of white Paper, cover the greatest part of your Honey in the Plate, and then go with it to your Bees, and gently lifting up one edge of your Hive, slide under your Plate, and so every Day till the Hive hath the quantity allotted it; observe, that the next Morning after you have put under your Plate, you may take it out again as clean and dry as if no Honey had been in it: Thus will they carry it up, and lay it in the Combs against a Needy time, where they can come at it, without running the hazard of their Lives, by coming down to the Bee-stool to be fed out of a Kex. But if you find that your Hiye wants any quantity, as four or five Pounds, then 'tis as good a way, to take three or four old dry Honey-combs, and put in a large Dish

Dish that will hold all the Honey, and lifting up the Hive, set it on the Dish, and in about 24 hours they will have clear'd it, not by eating it up, but carrying it up into their Combs, and safely lodging it there for their Winter Store. I gave this very Year about five Pounds of Honey, all at once, to one of my weak Colonies. Now the reason why we melt the Honey with Water, is because otherwise the Bees, tho' they would come down and eat a little of it, yet could they carry none of it into their Combs, and so it will do them little or no Service. By melting it as before with Water, you bring the Honey, which was before very hard, to the consistence of Honey as it is at Summer, and so they are capable to carry it up into their Store-houses.

Thus far of the Matter of which Bees must be fed, it must be of Honey ; and the manner, it must be made soft as before. Now for the time, and in this also you must be very careful : *September* is the best Month ; not but it may happen that there may be as good a time in *October*, tho' not ordinarily so. It must not be in a very Cold time, nor in Frosty Weather, for that will not do, because the Bees will not come down to it, or if they do, will be much damaged by the Cold ; not in a hot Day, when the Bees are much abroad, but in a moderate time, when few Bees are abroad, because if it should be in a hot Day that you give them the Honey, the other Bees smelling the fresh Honey, will croud in upon your weak Stock, not only for a Share of their present Feast, but by that Means discovering their

their Weakness, would never leave them as long as they have a drop of Honey left ; therefore it must be very moderate Weather, and the very best time for feeding, is in a warm Rain, in the Month of *September*, putting under your Honey about Seven a Clock at Night, so will they immediately fall to work to carry up Honey into their Combs, and continue the greatest part of the Night in that Work, and so be in no danger of the above-mentioned Disaster. When you have thus examined, and fed all that lack feeding in *September*, you ought to close up your Hives all round with Mortar excepting the Place where they go in and out at. And it is to be hoped, if you have done your Work well, you will have nothing more to do for them till after they have done a great deal for you, and requited your Care by their unwearied Labours the next Summer. But however, you ought in *April* to examine them again, and see if you have not been a little too sparing in your feeding the last *September*, and if you find it so (according to a vulgar Proverb, *We ought not to lose a Hog for a Half-penny worth of Tar*) give them another Plate or two, observing the Rules above, or else perhaps for want of giving them one Pound of Honey now, you may lose a good early Swarm, and the Stock itself, with 50 or 60 Pounds of Honey in them, which would render you *Penny Wise and Pound Foolish* with a witness.

C H A P. VIII.

Of their Wars, and Robbing one another.

ALL Persons whoever, that have kept Bees, well know that there are great Wars and Fighting amongst them, by which Fighting, many of them are destroy'd; but I find there are very few that know the true Cause of these Wars and Fighting that is amongst them, and so consequently are ignorant of the Means how to prevent this fatal Calamity. Now here I shall briefly treat of the Causes of these Wars, and the best Remedies that I have by Experience found to prevent the same.

First, The greatest Cause I find, is what is implanted in their own Nature. And here let me be rightly understood, I mean not that there is a Principle of Cruelty in them, that they take delight in killing one another, for it is far otherwise: But they have in them an eager Desire of gathering Honey, and when they find the Weather warm, and no Honey gathering in the Fields, which happens very often in the Spring before the Flowers are blown, and in Autumn when they are all gone off, now it so happens to these poor industrious Creatures, that a warm Day coming in either of these Seasons, the Bees are thereby called out to Labour; but after having ranged the Fields, Gardens, and pleasant Meadows, without finding any Honey, they range still up and down in pursuit of Honey, but can nowhere

where find it, but in the Stocks of other Bees, they will, with the hazard of their Lives, venture for some of it; but they play these Pranks far from home (tho' not always, for I have known them play the Thief in their own Neighbourhood). Now the Bees that are thus abroad upon the Search for Honey, very rarely assault a very strong Stock, but filch and steal amongst the weak ones. Now, tho' every Stock, nay the weakest do keep Guard in warm Weather, yet some of these robbing Bees will thrust in by the Guard, and whilst the Sentinels are attacking and examining some of the bold Intruders, others will slip in and rob and steal; and being animated by their own Success, they renew their Assault the next warm Day with greater Forces, carrying every Day more and more till they have broken Bulk, that is, torn open the sealed Combs, nor that the Bees thus assaulted are all this while idle, and tamely suffer themselves to be thus pillaged, no, they stoutly renew the Fight every time they come, in which many are slain; they double their Guards at their Porch of the Hive, engage the Assailants both within and without the Hive, so that you see a most dreadful Battle betwixt the true Bees belonging to the Stock, and these robbing Bees, which will never give over, if once they have broken Bulk, but 'tis ten to one in three or Days your Hive is quite ruined; sometimes after such striving and fighting you find all quiet, only every Day Bees striving to get in at the mouth of the Hive, and going out with great difficulty, because of the pressing of others to go

go in ; so that sometimes, if the Passage into the Hive be but small, you will see a Bunch of Bees (all striving who should get in foremost) as big as ones Fist ; the cause of which is this, In one of the foregoing Days of Battle, the *Queen-Bee*, belonging to the assaulted Stock, did lose her Life, at which time, as soon as it was known to all her Subjects, there was no more Fighting, or Resistance, but all became one People with the Robbers, and away they go with them, richly laden with their own Spoils, leaving the Hive empty of Bees, and unguarded, returning every Day with these *their* new Acquaintance to Pillage their old Castle, and carry their Treasure to their now new Lodgings ; and this causes the Throng at the Porch of the Hive to get in, for there being Honey to be had within for fetching, and now no opposition from within, they follow their Blows with great Diligence ; for the Bees will not fight one stroke longer to defend their Hive and Honey, than they have their *Queen* to animate and command them, looking upon themselves, and all their Treasure, not worth defending, or any longer contending for, after the loss of their Sovereign.

No Amazonian Dames, nor Indians more,
With Loyal Awe their Idol Queen Adore.
Whilst she survives, in Concord and Content }
The Commons live, by no Divisions rent ;
But the great Monarch's Death dissolves the }
Government.

No Council call'd, both Love and Valour cease ;
The Old they Die, but none supply their place.
All

*All goes to Ruin, they themselves contrive
To rob the Honey, and subvert the Hive.*

So whenever you see things come to this pass, and a Throng at the Door, go at Night, when all are return'd home, and lift up the Hive ; but you will find it to be a House without Inhabitants, tho' perhaps it may (at least some of the Rooms) be tolerably well furnished with Goods, which you having most Right unto, may take for your pains. By this Discovery you will save all the Honey that is left in the Hive, which otherwise would every Day be fetch'd away till it was all gone ; besides, it prevents a Deceit upon your self, for seeing Bees go in and out, you are apt to think you have there a good Stock of Bees, when indeed there are no Bees at all, but these Thieves all Day, and at Night there are none, neither true Men nor Robbers. But this Fighting and Robbing is not all times alike, but is more or less fierce, as the hive, is more or less strong, that is assaulted ; for if there be but few Bees, they are soon overcome, but if many, they will make a vigorous Resistance, and you may see Thousands slain on the Ground.

Another Cause of their Fighting, is, when they are overcome in Battle by the Robbers, and forced to leave their Hive, and shift for themselves where they can (for they never join with the Robbers unless their Queen be slain) then their Queen and they fly about till they find another Bee-garden, by their exquisite Smell, whereinto they immediately enter ; and

now being by their necessitous Condition (being without House or Harbour) become desperate, they seize sometimes upon one, and sometimes more Hives, and endeavour to get in to dwell there; for generally this sad Work is in the Fall of the Leaf, when it is too late for them to begin House-keeping for themselves; so that these poor Bees, who are just now ruin'd by Robbers (as it often happens to honest Men) are forced to be Robbers of others; but here they are in no better Case; for the other Bees finding themselves so suddenly assaulted with such Numbers, they take the Alarm, the Trumpet of War is sounded, the Warriors are called forth, and being animated by their own Queen (and the Desperateness of their Condition, if they should be overcome) they with inexpressible Valour, oppose themselves to their Assailants, where, in a very small time, you shall see the Ground cover'd with these Female Warriors. About 12 or 14 Years ago, as I was at Dinner with my Family, there was one knock'd at the Gate, and told me there was a Swarm of Bees flown into my Garden, in hopes (as I suppose) to have some Reward for telling the good News. But this being in the Month of *August*, I knew they must be a Company of Robbers, and so told my Intelligencer; but he reply'd he knew it was a Swarm, for he had rung them with a Pan half a Mile, by which I knew it was indeed a Nation of Robbers, who had been dispossess'd by some stronger than themselves; and going into my Garden I found it so to my Cost, for they made a sad Disturbance among my

my Bees, seizing upon several Hives, but more especially one, where you might have seen the dreadful Battel describ'd by the Silver-tongu'd Poet, in Words to this purpose.

*With Shouts the Bees to Courage each excite,
And Martial Clangors call 'em out to fight.*

*With hoarse Alarms the hollow Camp rebounds,
That imitate the Trumpets angry Sounds.*

Their Queen's and Country's Honour calls them forth,

Each Amazon is proud to shew her worth.

On their sharp Beaks they whet their pointed Stings,

Eager of Flight they tremble with their Wings.

*Some lead the Van, and some bring up the Rear,
And nimble Horsemen scower the Fields of Air ;
Advancing strait into the Fields of Light,
Their shocking Squadrons meet in mortal Fight :
Headlong they fall from high, and wounding*

wound,

*And heaps of slaughter'd Soldiers bite the Ground,
Till hollow Mourner of their Evening Bells
Sounds a Retreat, and Tolls them to their Cells.*

In the midst of this dreadful Battle I was forced to go in amongst them to do what I could for my poor assaulted Bees, but I could afford them little help in this so sudden and violent Invasion ; sometimes I quite stop'd up the Passage of my assaulted Bees, to prevent the entring in of the Robbers, but then I kept out the true Bees also. But strange indeed it was, to see these desperate Thieves when they were stop'd out, they would seize upon the

Crown of the Hive, the Bottom and Sides, any where, and sometimes every where, and pull and tear the Straw to get in, like so many ravenous Vultures; you might hear this pulling and tearing of the Straws of the Hive several Yards off, as much as to say, we will break open this House somewhere, and if you hinder us from coming in at the Door, we will break it open, either in the Top, Sides, or Foundation; like a Detachment of Dragoons order'd to go and possess themselves of such a Fort or Castle, they try at the Gates, but if prevented there, they try all Places, Windows, Walls, nay, at last, if nothing else will do, they go to work with their scaling Ladders, and enter at top, and take it Sword in Hand, and tho' many of these brave Fellows must fall in this desperate Attempt, yet on they must, be the Enterprize never so hazardous, take it they must, there is no seeing of their General on any other Terms; and thus it is with the Bees, whilst they were thus desperately engag'd, for fear they should seize on other Hives, I lifted up the Edge of that they were most about, and let them go in, and at Night, to prevent farther Mischief, I burnt them all together, and took what Honey they had left me. Now this kind of Robbing doth not very often happen, for truly if it did, there would be no way for you to help your self; they would do you great Damage if you were never so cautious.

Now the Remedy against this Mischief is as followeth: Robbing time is sometimes sooner, sometimes later, according as the Summer is, and

and is always twice a Year, Spring and Fall; but that in the Spring is not much, in comparison with that, which always, more or less, happens in the Fall of the Leaf, both which are in a great measure prevented by a timely stopping up of the Bees, I do not mean by stopping them up quite, for then you would do them great Damage. *First*, as they are a Creature endow'd with Heart and Lungs, they stand in need of breathing, and so stopping them up, would hazard the Suffocation of the whole Stock, of Bees. And *Secondly*, your stopping them up would hinder the true Bees from going in and out to Labour; for tho' there is not much Honey to be had abroad, and that is the Reason that Robbing doth begin, yet there is some to be had, so that you must not stop them quite up, for those that do not turn Robbers, will continue their Labour as long as there is any Honey to be had; and truly none are apt to turn Robbers, till after Honey-gathering is over.

You shall know the Robbers in the beginning of their Work, if you observe them in *August*, and sometimes in the latter part of *July* they begin; you shall see when any Hive is attack'd by Robbers, they first begin with a few, and these having but newly begun their Trade of Robbing, are not very bold at first, but as if they carried Guilt along with them, as well as Fear, they try to pitch here, at this End of the Landing Board, then at that, then at the Middle, gently touching and trying about, and immediately on the Wing again, and the true Bees catching at them, and sometimes lay

hold, and have them to long Examination before they pass Sentence of Death on these Intruders; for dwelling peaceably under their own Vine, and only enjoying the Fruit of their own Labours, they cannot tell how to believe any should be so unjust as to disturb their honest Repose, till by frequent Attempts of this Nature, they are made sensible to their cost, that it is but too true that indeed 'tis time for to look about them, for both Right and Property are invaded; so doubling their Guards, they are upon the Watch, but you, upon Observation as before, may always know these Robbing Bees, by their cautious and timerous way of pitching, they do not as the true Bee, come at once, boldly pitch, and enter in at the Porch, but dodge up and down, as if they would without the Knowledge of the true Bees steal in, and fetch only one Load of Honey, but after they have got a stronger Party (which if they succeed, they always do) they then grow bolder: But to the main Business of stopping them up, it is thus to be manag'd; as soon as ever you find any of these Thieves before describ'd, begin to assault your Stalls, then streighten their Porches, by letting them only have room for two Bees to go in and out at a time, or about three Quarters of an Inch, which small Porch or Entrance, they can, and will better defend against an Enemy, or Robbers, than they could a Passage of four Inches long. Thus you ought to do to all your Bees together, in the beginning of *August*, or before, if you discover the Robbers in *July*, you are then to do it, and it is thus easily done: Take a taper smooth bit

bit of Board made for that Purpose, but half an Inch square at the least end, and an Inch broad, and half an Inch thick at the other, and about three Inches long; so putting in this bit of Board a little way at the Mouth of the Hive with the small end foremost, then have in readiness some Lime and Hair, and presently smooth up all the rest of the Passage, then gently draw out your bit of Board, and you will have a Porch only of half an Inch, or three Quarters, according as you put your bit of Board in, farther or lesser way, and so let them stand all the Winter, and in the Spring, till robbing-time is over, which generally is in the beginning of *April*, many times in the Middle of *March*, according as the Flowers do blow; for let them blow early or late, when ever it is that there is plenty of Honey-gathering in the Fields, (you may throw open your Porches again to 4 or 5 Inches,) there will be no robbing of the Stalls; but if you find that notwithstanding all your stopping, they have still an eager mind to rob one particular Hive, and make violent Assualts every Day upon it in great Numbers, then 'tis a sign indeed that they have pretty largely tasted of its Sweetness already, and notwithstanding all your Care, it is still in great Danger: whereupon try it if it be not already too light for your farther Care, and if you find it heavy, and indeed worth saving, then there is but one way left to try to preserve it, and this must be done with great Care and Circumspection, and that is to stop the Hole quite up, but it must be in the Evening, when

the

the Robbers are gone, and the true Bees are all within, and it must be with such Materials, as will admit of their Breath to go in and out, 'tho not of their Persons. This is done three Ways, either by plastering in with Mortar a bit of Comb, or else by Quills thrust in hard one by another, till you have fill'd the whole Porch, or Pieces of Tobacco-pipes thrust in very hard one by another, so will the Bees be kept in, and the Robbers kept out, the Honey preserv'd, and your Bees provided for, instead of being destroy'd: You will see every Day the robbing Bees come, and at first finding no Resistance at the Porch, try very eagerly to get in, but after several Days tryal in vain, they grow weary, and so leave it, and in about a Week wholly forget it, at which time you may open it again.

Now in doing this Business, here are several things to be very carefully observ'd, or else you marr all your Work, and so do more harm than good; for you must be careful when you stop up your Hive, that you plaster it all round the Bottom, and make all close and secure every where else, for two Reasons. *First*, Your Bees being stop'd up, will have an eager Desire to take the Air, and so will try every part of the Hive to make way to get out, and will get out if possible they can, but where-ever they come out, either Bottom, Top, or behind, they will go to no Place to go in again, but to the old Place where they have been us'd to go in and out at, which now they are prevented to do by its being stop'd up, and by their thronging to get in, you take them to be Robbers, and so destroy

destroy them. *Secondly*, The Robbers finding themselves disappointed by being stop'd out at the Mouth, will not fail to try your Hive or Box all round, Top and Bottom, to come at the Sweet they have already tasted of.

Then also if you make use of Quills, they must be very small, or else some of the Bees I have known thrust themselves thro' a large Quill and so not being able to get in again, are lost; so that if you use Quills, they must be small, or some large Feathers amongst them, I mean, only the clear of the Quills, or Feathers, with both ends cut off, that they may breath thro' the hollow part of them.

CHAP. IX.

The Manner of taking the Honey.

AND this melancholly, and indeed tragical, as well as last Part, is the most unwelcome to me to treat of, it being as well contrary to my Nature (to destroy those Creatures I have so great an Esteem for) as to my Judgment, as will hereafter be made appear; but lest there should be something wanting in this Tract of Bees, I shall briefly lay down the following Rules: If you design to keep only a small Number of Bees, then about the Middle of *August* weigh all your Hives, that is poize them with your Hands, by which you will be able to judge of their Weight, and so take the heaviest and lightest, the heaviest, because they afford you most Honey, and the lightest, because

cause they will not live over the Year ; if you find they don't weigh 14 Pounds, they will hardly live.

But if you design to keep many Bees, and increase your Stock as fast as you can every Year, than leave all standing that are strong enough to stand, and take only the lightest that will not, so will you by their swarming increase into a very large *Apiary*, that will afford you great Profit, as shall hereafter be made appear. When you have poized them all, and marked which of them you resolve to take, then proceed after this Manner. Have in Readiness some split Sticks about 6 Inches long, and some Rags dipt in Brimstone, and put in each of these split Sticks, then dig as many Holes in the Ground near your Bees, as you design to take Hives ; then in the Evening stick in each Hole one of your Matches, and lighting one at a time, fetch the Hive and set over it, immediately with some of the Earth stop the Hive all round to keep in the Smoak, and keep in the Bees, they will be all dead in half a quarter of an Hour ; so giving the Hive two or three Knocks with your Hand to shake down the Bees that hang about the Combs. Take it into your House for your use.

C H A P. X.

The Profit of Bees, where many are kept, and how to raise to a good Number.

Suppose you begin to raise your *Apiary* with Ten good Stocks, which in some Parts of this Kingdom may be bought for ten half Crowns, in others for Crowns, but in this Country they are ten Shillings a Hive. The first Year you will, according to the foregoing Directions, by doubling your Casts, be able to have about 25 good Stocks, and the next Year about 60, and the third Year about 150, barring Casualties, and they prove good Years; so that when you have rais'd this Stock, you are rich enough, if you are not over-covetous; so that in three Years time you may from Ten Hives, if good Weather comes, have Bees enough to take the fourth Year 160, more or less, according as the goodness of the Weather is, which set them all at Five Shillings a Stock, good and bad together, comes to 40 Pounds Sterling; and I suppose, whoever doth arrise to the half of this Profit, will suppose themselves very well rewarded for the Care they have taken about them.

Thus having given Directions how to manage your Bees in Straw-hives, which I was willing to do, because most of the People of *England* will never attain to the keeping of them in Boxes, for two Reasons: *First*, Because 'tis a hard thing to put them out of their old Road, which every Old Woman thinks she under-

derstands. And *Secondly*, Because it is a more chargeable way than the other, and therefore many cannot attain thereunto.

I shall now go on with my Design in teaching the way how to keep Bees in Boxes or Colonies, which is more pleasant and profitable than the other, and more merciful; because in this way, which we are now about to treat of, we kill no Bees, yet have great quantities of Honey.

CHAP. XI.

The way of keeping Bees in Colonies or Boxes, with Glass Windows, without killing the Bees, as in the Old Method.

IN this way, which was first invented by Mr Geddey; who obtain'd a Patent for the same of King Charles, there is a necessity of having a Bee-house for to keep your Colonies in, not an open Bee-house, such as Straw-hives are commonly kept in, but close with Doors, both before and behind; for if your Boxes were exposed naked to the Beams of the Sun, it would melt the Honey and Wax too, and so ruin the Colony. For as Wood is more dense than Straw, so a Box is more capable to retain the heat of the Sun than the Straw-hive is, and consequently the Sun will melt the Honey and Wax in a Box, which it would not do in a Straw-hive if it stood in the same place. In this Method their Swarming is prevented, for all Bees Swarm for want of

of room, which want is here supply'd, by giving another Box when they want room; neither in this way do we kill any Bees, which being a merciless and cruel way, is here prevented, and the Bees preserved alive till they die a natural death.

One thing I had forgot to inform my Reader of, and that is this; the best way is so to place his Bees, if it may be done with convenience, that they may be near Water, I mean within twenty or thirty Yards of some running or standing Water, it matters not which, they drink much, and fetch Water often to mix up their Sandarach or Bee-Bread to feed their young, especially in *March, April and May*; so that if they should be very far from Water, they would lose much time in their many Journeys to fetch it; but this Defect may be easily supply'd, by cutting them a little Trough out of Elm that will hold about a Gallon, and set it or hang it near them; or if you will be more curious, let it be well and exactly made of Deal-boards neatly nailed together, and well Painted three or four times over, that the Weather may not hurt it. I have one of these in my own Garden, where I sometimes see an hundred or more drinking together, which is a very pleasant Sight, as well as a great Convenience to the Bees; but be sure always remember to cover these Troughs with small Boards of Deal for them to stand upon and drink, otherwise many will be drowned, I mean for the Boards to swim in the Water, that they may sink as the Water sinks; so will the Boards always be wet, and the

Bees

Bees will stand upon them and drink by sucking the Water out of the wet Boards, but will not drink immediately out of the clear Water.

CHAP. XII.

Directions to the Carpenter how to make a Bee-house for Six Colonies or Boxes of Bees, which if full of good Bees, will at some times employ 18 Boxes.

THE Length of the House must be 12 Foot, the Breadth two Foot, and the Floor two Foot broad; and because no Boards are so broad, you must doult or nail together on the under side, 2 Boards that are a Foot broad, and 12 Foot long. On this Floor all your 6 Colonies are to stand at an equal distance one from another, the 2 end Boxes within 4 or 5 Inches of the ends, and the space betwixt equally divided for the other 5 Boxes; they stand 4 or 5 Inches from the end, that you may conveniently put down your Hand to take hold of the Iron handle of the Box, in order to lift it upon another Box, when there is occasion, as shall be taught hereafter.

When the Carpenter hath provided himself with the Floor, then let him with Fir Balks, or Deal Boards cut, make a Frame after this manner. The two ends must be made, each consisting of two Pillars four Foot high, and fastned together with a piece of Board, about a Foot

a Foot from the Ground, for the ends of the long Board designed for your Floor to rest upon, then with slit bits a-cross fasten the Pillars together in several places; then fasten your two Plates of the House before and behind, which must be whole Deal, 12 Foot long, and 4 Inches broad, with a Rabet in the lower side, for the Door to shut into; then make your Rafters, which must be fastened to your Plates, which must be about 8 or 9 pair, to nail the Boards to, which are to cover the Bee-house; then make 4 Doors for the Front, and 4 Doors for behind, leaving two upright Pieces, where it will not be in the way in the management of your Boxes to fasten your Doors to, with Locks, if you please, these may clasp one over another, so that one Door shall keep another fast. In short, this long Bee-house must have Doors all along, both behind and before, that you may have any part of the Bee-house open as you have occasion. Your Doors must be as high as the Eyes of your Bee-house cover will let it, which will be near 3 Foot. Then you must make a Ledge, and this must be done with great Care. This Ledge must be a long piece of Board 12 Foot long, and an Inch and a Quarter thick, and 2 Inches broad. In this Ledge you must have a Rabet of half an Inch, for your front Doors to shut into, to answer the Rabet over head in the Plate of the House. The Floor of the Bee-house, before spoken of, must come to the very outside of your House, and this Ledge must be nailed on all a'long, to the very outside of the Floor-board; so then when your

Door is shut into the half Inch Rabet, it will be even: But before you nail down this Ledge you must Saw in the under side 6 Passages, and cut them out very smooth, the Passages are for the Bees to work in and out at, into the Boxes, and must be four Inches in length, and half an Inch in height. Against the lower edge of these Holes, you must nail on a Landing Board, a little wider than the Hole, about 5 Inches long, 2 Inches broad, and set a little sloping for the greater Conveniency for the pitching of the Bees; the Floor being of this length, and to bear so great a Weight, must be supported in two or three places underneath, or else such a Weight will make it swag, and put your House and Doors all out of order.

First, Observe that your Bee-house must be all Doors before and behind, because there is no part of the House, but some time or other, you will want to have open.

Secondly, That these Doors must be made, that they may be kept very close, so that the Sun in the Heat of Summer may not, by its shrinking the Boards, let any Bees go in and out at the Chinks, or any other way (much less a Mouse) but thro' those holes cut for the same purpose in the Ledge under the front Doors, for there is no occasion for such an one for the back Doors.

Thirdly, That the main Design of this Ledge is not for the Rabet for the front Doors to shut into (tho' it serves very well for that) but to makes Lines of Communication from the Landing-boards to the Boxes.

Fourthly,

Fourthly, That this Ledge is 2 Inches broad (when indeed an Inch would do to make holes go thro', and for the Rabet for the Doors to shut into) because otherwise there would happen these two great Inconveniences. *First*, The Glass Window in the Front of the Box would then stand but half an Inch from the Front Door of the Bee-house, which in extreme hot Weather would make the Bees so hot they would not be able to endure the Box, but would be in danger of flying all away, or else at best would set their Honey a running, and so expose them to be robb'd by other Bees. But *Secondly*, A Straw-hive would come too near the Door, if the Ledge were but an Inch, for when you put in your Straw-hives (which you must do at first, as shall be hereafter taught) into your Bee-house, you must bring it to touch the hole in the Ledge, and the Belly of it would so hang over the Ledge, that the Door of your Bee-house would not shut, or at least not shut but with thrusting back the Hive of Bees from its place, upon which would follow several Inconveniences, all which is prevented by having the Ledge 2 Inches broad; so there is room enough for the Door to shut, notwithstanding the Belly of your Hive and your Box standing an Inch and half from the Doors of your Bee-house, will stand cool enough in the hottest Weather.

Fifthly, That besides the Standards that are for your Doors to lock into, you had best to have Hasps of Wood to turn on a Nail, six before and six behind, to hasp the Doors, to keep them fast in their places, that the wet

Weather may not, by their swelling, put them out of order, and that the hot Weather in Summer may not so warp them, as to spoil their true shutting ; but good Painting the Bee-house will in a great measure prevent both these Misfortunes.

Sixthly, Be sure to take care in the making your Bee-house, that you so contrive your Doors, as to leave none of the Standards whereinto the Doors are to lock, against any part of the Boxes, but only in the Spaces betwixt Box and Box.

Seventhly, Leave 20 Inches betwixt each hole that you cut in your Ledge. The best way to know exactly where to cut these holes in the Ledge, is to take a Box, and placing it within 4 or 5 Inches of the end, mark the hole against it all along your Floor, then mark your first hole to be cut in your Ledge over-against the hole, or sliding Shutter of your Box. When this hole is marked, then go and mark them all out, leaving 20 Inches betwixt each hole, and that will bring you right at the other end of the Bee-house.

Eighthly, That I have here projected a Bee-house for 6 Colonies, rather than for a fewer Number, because it will cost very little more than for one, two or three. But however, if any have a mind for a less, the Workman will be able by this Model to make one for three, which if less than six is the best Number.

Ninthly, That the Doors, as well as other parts of the House, are to be made so close, that the Bees shall no way get in nor out, except at the

the Holes made in the Ledge on purpose; because it will not only defend them against the Cold in Winter, but preserve them from Thieves and Mice; and Care must be always taken that there be no Way, Chink, or any other Defect in your Box, that may let any of the Bees into the House, for they will be lost, or make their Way out through the House, if any Chinks be wide enough, which will expose them to Robbers; for where a true Man can get out, a Thief may get in.

Tenthly, Let the Boards for the Floor be very smooth and even, that the Box which is even may touch in all Parts, else the Bees will creep out under some Corner of the Box, and be lost.

Eleventhly, The Boards for the Cover of your Bee-house must be 12 Foot 4 Inches long, that it may come 2 Inches over each end, and two Boards slit Feather-edg'd will cover the House.

Twelfthly, Let your Bee-house stand as free from the Wind as you can. The best way for the Bees is, that the House stand to the *South*, inclining a little to the *East*, and let it be well fastned by large Posts of Oak, set at least 3 Foot into the Ground at each corner, to prevent being blown down by high Winds, as some of mine were in the great Storm.

Thirteenthly, You cannot set it against a Wall, as in the common Method of Straw-hives, but if you choose such a place in your Garden, you must set it 4 or 5 Foot from the Wall, that you may easily open all the back Doors.

C H A P. XIII.

*Directions how to make the Boxes or Box-Hives
for the Bees, with Iron Handles and Glass Win-
dows.*

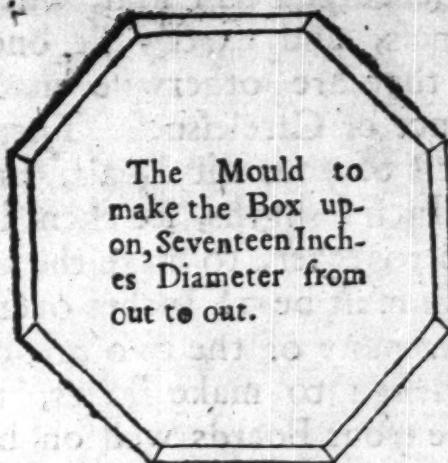
THE Materials to be got ready before your Carpenter doth begin to make the Boxes, are these that follow. Thick slit Deal, which must be of the clearest Diamond Dram Deals, 9 or 10 Inches broad, which are an Inch and half thick before they are slit; so that the slit Deal will hold above half an Inch when Planed of both sides. Your *Christiana* Deals not being thick enough for this Work, and yet they are too thick and heavy to be made of them without slitting.

One of your Deal Boards must be slit two kerf, that is, slit into three Leaves instead of two. These being thinner than the rest, are to make the Slider on the top of the Box, and the Doors over the Glass Windows. Square Panels of Glass, 5 Inches broad, and 7 Inches high; Trunk Handles of Iron bought at the Iron-mongers, long bits of thin Iron or Tin, 5 Inches long, and an Inch broad, some Two-penny Dove Nails, or small Hinges, with some Nails and Three-penny Sprigs.

Then let the Workman proceed to make a Mould, for his more exact making the Boxes upon, that the Boxes may be exactly of a bigness, to fit one another, when they come to be used about the Bees.

Let

CHAP.



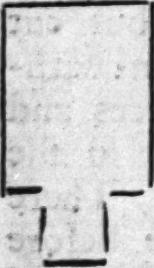
Let your Bench be very smooth, exactly even, and well planed; for if your Bench be uneven, so will also the bottom of your Boxes, and so be unfit for the Floor of your Bee-house. And whereas the Form of the Box must be Eight Square, so must be also your Mould. Upon your Bench mark out, with your Rule and Compasses, an exact 8 Square of 18 Inches Diameter, which is the breadth of your Box, then fit small bits of Deal for a Mould within your place marked out half an Inch. These bits need not be above half an Inch broad, and so nail them fast down to your Bench in an 8 Square, 17 Inches Diameter; so that the Box which is made on the outside of this Mould, will be 18 Inches or something better, according as the Board your Box is made with is in thickness. And here take Notice, that this Mould is never to be taken up from the Bench till you have made as many Boxes upon it as you design to make in all, so will they be used with less Trouble,

as by Experience you will find, when they are all of a bigness, and exactly fit one another, then when they are otherwise made, either thro' Ignorance or Carelessness. Then take one of the thickest of your slit Deals, and sawing it out in 18 Inch Lengths, let them be glewed two and two together, to make the tops of the Boxes, which must be 18 Inches over: so having glew'd as many of the two breadths together as you design to make Boxes, then proceed to plane your Boards well on both sides, and then saw out the Scantlings of the Boxes, which must be 7. Inches and a quarter in the widest part, 6 Inches and 3 quarters in that part or side that is to be the inside of the Box, the edges being thus smoothed off with a Plane, and set upright, and staid down to the Bench with Sprigs against the Mould before described, so you will find that 8 of these pieces of Board will come round your Mould, and make a Box; tho' every Box must have but 6 of them, because the Squares before and behind must not be of these Boards, but fram'd with 2 Rabets, one inside Rabet to receive the Glass in the inside of the Box, 7 Inches long, and 5 Inches broad; and another Rabet on the outside above the Glass, to receive a thin Door, which must be made to shut over the Glass Window, and hung to the Frame with the small Two-penny Dove-nails before spoken of, and must be planed very thin, for the whole Frame containing the Glass, and this little Door must be no thicker than one of the other Boards, and used as one of them, before and behind the Box, and with a small Button

Button to turn upon a Nail it is to be fastned with, that without trouble you may open the Door when you have a mind to see what your Bees are a doing ; so when you have fixed these 2 Frames with Glass Windows one against another, or one before, and another behind, and fitted your 6 pieces to them, and with Three-penny Sprigs well fastned them together, then fit your Head, which must not be nailed on at top of these pieces, but cut exactly with great Care, and let down within these pieces, and then let all the pieces and Frames be well Sprig'd to this Head, so the Box is made, but not quite finish'd. There remains yet Three Things to be done before 'tis finish'd, and that is a Hole and Slider over it in the top of the Box, a little Slider under the Front Door, and two Sticks a-cross the Box, to rest the Combs upon. *First*, As to the hole in the middle of the top, it must be 5 Inches Square, and half an Inch on each side of the hole must be cut in Grooves for a Slider to run in, that when it is once fastned in, it shall not rise to come out, but only slide too and fro, in order to stop, or leave open the hole of 5 Inches Square, as occasion requires. For when the Box is to be the upper Box, then the Slider must be thrust home to shut the hole, but then the middle Box or under Box must have the holes open, with the Shutter thrust quite back, this hole serving for Communication between Box and Box. Now the way to make this Slider, is to pare away with a sharp Chizel a place for the Slider, which must be wider than the hole by at least half

an

an Inch, and so run in a Groove, being hollow on purpose to shut the hole, or to be thrust back. This cutting away a place, must be as deep as your Slider is thick in the top of the Box ; but then the best way is not to have the hinder part of this Shutter or Slider to be of the whole breadth, as it is at the other end, but cut just at the hindermost end at the breadth



of 2 Inches only, after this manner, which two Inches is ~~as~~ sufficient to drive home this Shutter with, when you want to cut off the upper Box of Honey, and more convenient than if it were left to the whole breadth open ; it must be so ordered in the making this Slider, that when it is thrust quite back, this narrow end may be even with the outside of the Box, and two little bits must be nailed on after the Shutter is made, and put into its Grooves on the Box of each side of the narrow end of this Shutter, to fill up that which is cut away off this Shutter, and this will hinder the Shutter from ever falling out, or being lost, and also prevent the Bees from coming out at each side. The use of this hole in the Box, I have told you before, is for the Bees to work down thro' into the under Box, and this Slider is to drive home when you are to cut off the upper Box ; so that at once it serves to cut off one Box from another, and to stop the hole of 5 Inches, and keep the Bees in the under Box, but it must have a thin bit of Tin, or thin Iron nailed on at the broad cutting end, and the Slider also shaved away thin to nothing,

and

and then the Plate of Tin nailed on, tho' it be not very sharp, will very well cut off the Honey and Wax that is in the hole. The next thing is a Slider in the edge of the Box, under the Front Window, that Square of the Box where the narrow end of the broad Slider before spoken of, must be always the hinder part, and this narrow end must always come out over the back Window, so under the contrary Window, which is the Front Window, there must be a Passage cut about half an Inch in height, and 4 or 5 Inches in length; but you must make a little Slider to slide along to stop this hole also when there is occasion, or as much of it as you think fit. This little Slider must be cut with sloping edges, and the Box where it is to go hollowed; so that when it is thrust home (as it always is when a Box is raised) it may stop the hole close, and also be entirely of the Box, and not fall out. When the Box is raised this Slider must be about 7 Inches long, so as to come about 2 Inches without the Box, with a Notch cut in the outer part, almost at the end, to take hold of to pull it out by, when it is too far in, or to draw it out to its full length, if occasion be, without at all disturbing the Bees. Then let your Trunk handles be put on to the two sides of your Box, that as you stand either behind or before your Bee-house, you may conveniently lift up your Box. Let these handles be very fast clinch'd in the inside; the best way is not to put the handles near the top nor bottom of your Box, but the middle. Thus is your Box compleat, and may very well be

be thus used without any other Addition, and none have been made with any till since the first Edition of this Book was printed, not but I have long since discovered one Inconveniency, which the Bees have sometimes suffered in the Boxes, but always look'd on it as remediless, and therefore said nothing of it, but having by late Experience found out one, shall candidly discover it to my Brethren, who are lovers of Bees.

The Inconveniency that we are now going to remedy, is this ; that in the middle or latter Months of the Summer, as *June*, *July* and *August* (and I think never before nor after) when the Colonies, by reason of their continual breeding come to be very full, and the Weather proves very hot ; but if it be only hot and clear all is well, but if it be very hot, and sometimes cloudy or show'ry, the Bees by natural Instinct being sensible of their Danger by being abroad in the Rain, high then home as fast as they can (tho' very often they are more afraid than hurt). For I have often known them to press home in that violent haste, only upon the rising of a Cloud when no Rain hath followed, so all pressing violently at the Mouth of the Box to get in, they stop the Passage so close up, that those within are like to be suffocated for want of Air, which makes them so uneasy, that they are like mad things within the Box ; nay, sometimes they have grown so hot, that I could scarcely hold my Hand on the Glass Window ; sometimes in this Extremity I have lifted up the whole Colony on one side a little, and thrust

thrust under the Edge of the lowermost Box a pretty thick Knife-blade, by which means having let them in Air that way, they have in a little time been quiet again ; but I have more than once known them npon such a Disturbance come powdering back again out of the Mouth of there Colony two or three Quarts at a time and lain in a Bunch at the Door threatening to swarm ; to prevent which, I have gone presently and raised them upon another Box, thinking they had wanted room, when indeed it hath been no such Matter, but only want of Air in the Box occasion'd as above, but now having found out an infallible Remedy, and without Trouble or Cost to those that put it in Practice. I shall here direct the Joyner that makes the Boxes according, let a Hole be cut 2 Inches square in one of the hinder Cants of every Box, it matters not whether it be of the right or left side of your hinder Glass Window, and it is no great matter whether it be high or low, but I think it will be most convenient about the Middle, over this Hole in the inside of the Box nail a Piece of Tin Plate punch'd full of Holes as big as you please, provided the Bees cannot creep out at them, then make a very thin Sli-
der to run in Grooves over this Hole on the outside, that when it is thrust home all may be close and warm, and when there is occasion in violent hot Weather to draw it back, the Air or Breath may freely pass through these Holes, and so prevent the Disorder aforesaid, as well as prevent their Swarming.

Or thus (which will do as well) with a small Piercer bore Holes in one of the hindermost Cants

Cants of the Box, as thick as you can for two Inches square, and so let the Slider run over these Holes instead of the Tin Plate: This last I have experienc'd this last Summer to answer well; this boring of Holes may be done by those who have Boxes already in use with Bees in them, for tho' they cannot with Hammer and Nails put on the Slider with its Grooves, yet they may easily bore the Holes, and cover them up close in the Winter, with a double woolen Cloth stuck on with Pins, or with a Plaister of Bees-Wax, spread on Linnen, and put on all over these Holes when there is no occasion to have them open, and pull it off when there is, as they shall see cause; these Holes or Plates with Holes, with the Slider, you may draw back when your Bees want raising on another Box, if you are afraid of their sudden Swarming; by letting the Holes remain open, that will be prevented, and perhaps you may stay a Week the longer before you raise your Colony upon another Box, till by the increasing of their Numbers you are forc'd to it, the Manner how, and the Time when, you will find at large describ'd in its proper place.

The last thing is to put two Sticks cross, or rather two half Inch square Sticks made out of your Deal, one about 2 Inches above the other cross the Box in the inside, let the lowermost be about 2 Inches from the Bottom of the Box, and so fastned at the four ends, by driving a Nail thro' the outside of the Box into the ends of the Sticks, which you need not drive quite home; so that when you are going to take your Honey out of the Box, you may draw those four

four Nails, and then your Sticks will come out with your Honey with a great deal of ease.

Observations on the aforesaid Description of the Box.

First. **T**HAT no one thing here described can be omitted; the least part is the Slider under the Front Window. And here perhaps you may think, if, if there be but a Hole 4 Inches long under the Front Window, to set against the Hole in the Ledge of the House, the Bees will work in and out very well into the Box.

'Tis very true, so they would without the Slider, but for all that, you cannot be without it; for the Slider serves when Robbing-time comes, which is in *August* or *September*, by thrusting it in farther, to straiten the Passage of the Bees; nay, sometimes you are forc'd to thrust it in so far, that you only leave room enough for one Bee to go in and out at a time, and then when you raise your Box upon another, you thrust it quite home; so that it being held in by running in a Groove, it cannot fall out, and so it makes that part of the Box close and entire as the other Parts. For now the Bees raised upon another Box, must all work in and out thro' the hole under the Box.

Secondly, That the Trunk Handles be strong and well fastned, for if one of them should fail in lifting up a Box, or sometimes the Weight of two Boxes lies upon one Pair of Handles, (which may be 100 Pounds) it would, perhaps, by their Fall, prove the Destruction of your Colony.

Thirdly,

Thirdly, That the Sticks need not go exactly cross your Box, and it is better they do not but only in the Form of St. Andrew's Cross X, or the Letter X thus.

Fourthly, That tho' we have Glass Windows to open sometimes, yet you must have Doors to shut over them; for having the Light always upon them, would very much disturb them.

Fifthly, That there are yet two Instruments more, which tho' they do not immediately belong to the Boxes, yet they cannot be used without them; and that is a light Wooden Mallet, and a thin Piece of Wood of the thickness of the broad Slider on the Top of your Box, or rather somewhat thinner, and about 2 Inches broad, and 9 Inches long, or the same breadth of the narrow end of the great Slider on the top of the Box. The use of these two Instruments are for to take off the Box or Hive on the Box withal, by setting the end of this thin bit of Board against the narrow hinder end of the Slider of the second Box, and with the Mallet drive it home to cut off the Combs in the Hole 5 Inches square on the top of the Box, that so the upper Box may be taken away, as shall in its proper Place be directed.

C H A P. XIV.

*Directions how and when to furnish your Bee-house
with Bees*

Having strongly set up your Bee-house as before directed, the best time is in *October*, when all Casualties of their miscarrying by robbing is over, then the best Way is for you to go about amongst the Bee-gardens of the poor People, who will be glad of your ready Money, and let you take your choice, choose such as were Swarms that Summer, and such as are comb'd down to the Stool they stand on, for if they have not, 'tis a sign it was a Cast, or at best but a small Swarm; but be sure you take such as are very heavy, for you had better choose a Staller of two Years old, than a light Swarm; for if they are light, it will take them up so much time to fill up their own Hive, that it will be late in the Spring before they will want the Box to be put under them, whereas if they were very full of Bees, and heavy, they will want their Box in *May*, sometimes in *April* to be put under them. Thus having provided your self with half a Dozen such Stocks of Bees, let them be brought home to you in the Month of *October*, or at farthest in the beginning of *November*. The Way of removing them must be warily observ'd; you must lay a thin, and somewhat large Napkin on the Ground, before the Hive of Bees you design to remove, about

eight a Clock at Night, (if it be a cold Day, you may do it by six a Clock) for by that time they will be all in, and up in their Hive, so that in taking them up there will be the fewer lost; then take up the Hive of Bees gently, but quick, and set them down on the Napkin, and suddenly take up the four Corners of it, and tye them cross-ways over the Crown of the Hive, and then take a Packthread and tye very hard round your Hive on your Napkin, and so they are fitted for Carriage; the best Way is on a Hand-barrow, three or four at a time betwixt two Men. When you have them home, open your Bee-house and put them all in, then first untie one of them, and take the Napkin from under it, and putting a Stone, or something an Inch thick at least, lay your Napkin by the Hive thus open'd, and the loose Bees about the Napkin, by the humming of their Fellows within the Hive, will be call'd home, so that few or none will be lost. About a quarter of an Hour, or rather more, when your Bees in the Hive first open'd are pretty quiet, then proceed to perform the like to all the rest, and so leave them till the next Morning. About 6 or 7 a Clock, or about Sun rising, set all your Hives with their Mouths against the Holes made on purpose in the Ledge under your Bee-house Door, and then with Lime and Hair smooth up all within the Bee-house, so that no Bees may get out of the Hive any-where, but thro' the Hole in the Ledge in the Front of your House, and then you have nothing more to do for

for them till next *May* generally, or however till the latter end of *April*.

First, Observe that the best time to furnish your Bee-house, I suppose to be in *October* rather than *May*, because you may then buy Swarms that may fail by Robbing, or some other Casualty, tho' you are left to your own Liberty. If you can have the Opportunity of good large Swarms near you, 'tis pitty to neglect it, but then they must be brought home to you the same Day they swarm; and the Hive put with its Mouth against the Hole of the Ledges, as before.

Secondly, Tho' you furnish your House with Swarms in *May*, you would be no forwarder for the Bees working down into your Boxes the Spring following than if you bought them in *October*, for these will be fit to be rais'd upon the Boxes the Spring following, and your Swarms will be no more.

Thirdly, That if you please to fill your House with Swarms, you have them brought home the first Night, for if you should let them stand two or three Days, and the Weather good, they may make Combs to hold Honey to drown themselves in their Carriage, for the Combs being then tender, and the Weather warm, they are apt to break down in Carriage, and so the Virgin-honey being fine and thin, they will be clamm'd in it, and so spoil'd. This I know to my Cost to be Matter of Fact.

Fourthly, That we take a thin large Napkin, thin, because if it should be of thick Cloth, such as close Diaper when new, or Damask, it would be too thick for the Bees to breath through,

and tho' it might not suffocate them, it would make them very angry and troublesome, in putting them into the House; and large it must be, otherwise it would not reach to tye over the Hive, especially if the Hives be of any Bigness.

Fifthly, That you untie not your Napkin off of your Hives of Bees altogether, for if you did so, some that were loose not going to their own Hive, but into another instead thereof, being call'd by the humming of those in the Hive, will be all slain, which by the Method prescrib'd will be prevented.

C H A P. XV.

Directions when, and how to raise your Hives of Bees on the first Box.

IF the Spring be forward, the breeding of the Bees will be also forward; therefore you must have a little Eye to them in the latter end of *April*, and in the Month of *May*. You must not raise them upon your Box till they are very thick about the Mouth, or rather begin to lay out with a Tendency to Swarming, then they are fit to be raised, and you must proceed thus, having your Box ready, with the top Slider quite open, that the Bees may pass from the Hive down into the Box, and the Slider in the Mouth of the Box drawn back, that the Bees may have room enough to work in and out of the Box, then open both the front Door, and the back Door of the Bee-house,

house, in that part of it where the Bees are to be raised, then let somebody stand ready with the Box, holding it with the two Iron Handles at the front of the House, and the fore Slider or Mouth of the Box to themward, go you behind the House, and gently lift up the Hive so high, that the Box may go under it, then let him or her with the Box in hand set it in its Place, with its Mouth against the Hole of the Ledge so often spoken of; the Box must be set up close against it, then quickly set down the Hive upon the Box, on the Middle of it as near as you can guess, tho' there needs no Exactness; then presently with Lime and Hair, stop up the Mouth of the Hive, so the Bees will immediately work down thro' the Hole in the top of the Box, in and out at the same Hole they were used to before, without any Lett or Hinderance.

First, Observe that we do not raise the Hive on the Box till they want room in the Hive, which you know by their lying out in a Bunch, for if you should raise them too soon, before they want it, you will greatly hinder them, by carrying all their Work thro' a great empty Box which they do not want, because they have not fill'd their own Hive.

Secondly, That we presently stop up the Mouth of the Hive as now useless, the Mouth of the Box serving for the same purpose.

Thirdly, If you should not presently stop up the Mouth of the Hive, the Bees would still hang about that, and not go down into the Box, but the Mouth of the Hive being stopt up, they

having now no other Passage, they presently take to it.

CHAP. XVI.

Directions how to raise the first Box and Hive upon a second Box.

YOU may now be upon greater certainty about raising the Box, than you were about the Hive ; because of the Glass Windows in the Box. When the Bees have work'd down in your Box, so as that the Combs come to each Window of your Box, and your Box seems very full of Bees, as well as Combs, then is the time to raise it on another Box, especially if you see them seal up their Honey in the Combs half way down the first Box, which you may easily see at the Windows as before ; then placing somebody before that part of the Bee-house, with a Box ready in hand, and the broad top Slider thrust quite back, that the hole may be open, and the Slider in the Mouth or under part of the front of the Box drawn so far back, as to leave a sufficient Passage into the Box, then as you before listed up only the Hive on the first Box, now you must take hold of the Iron Handles of your Box, and lifting up Box and Hive together, set under the second Box, which sometimes in a good Summer, you may do by the Middle of June, immediately thrusting quite home the Shutter of the Mouth of the first Box, that no Bees may come out at that

Place,

Place, but now work in and out thro' the second Box.

First, Observe, that there must always be great Care taken when you put under a Box, (whether it be the first or second) that the Slider in the top of the Box be always thrust back, for else your Bees cannot go down into the under Box, according to the Design of these Boxes for these industrious Servants of ours, tho' they may be help'd in their working, by thus supplying them with more room, yet they must not be contradicted in the nature of their working, which is always to work downward and not upward.

Secondly, Be sure a little after you have rais'd them on a new Box, to open your House again, and see that your Box is set close to the Ledge of the House, that the Bees may not creep from between your Box and the Ledge into the House.

Thirdly, Always take notice, that if your Boxes, when set one upon another as before directed, do not fit one another exactly, but there be room enough for the Bees to come out into the House betwixt the joyning of the two Boxes, that you with a smooth Knife fill up those Chinks with Lime and Hair; also if your Board should not be made smooth, I mean the Floor of your Bee-house, so that the under Box doth not stand close enough to it to keep the Bees in the Box, but that some of them creep out from under the Edges of the Box, then supply also that Defect with Lime and Hair, so that you now having a

compleat Colony of two Boxes and a Hive, you have nothing to do till you take off the Hive.

C H A P. XVII.

Directions how and when to take off the Straw-hive, and return the Bees found therein to their Fellows, that none may be lost.

WHEN by your Glass Windows you perceive your Middle Box is well furnish'd with Honey, (I mean the Box that your Straw-hive immediately stands upon,) then to take off the Hive proceed thus. First of all take a Napkin, and with some Nails, or Pins will do as well, for I have often done it with the latter, pin your Napkin with one end on the Landing-board, where the Bees pitch before they go in, let your Napkin be up close to the hole, but so that the hole be still open, that the Bees be not disturb'd, nor their Work hinder'd. In this Operation you have no occasion to open the front Door of your Bee-house but only the back Door, then take your thin piece of Board and Mallet before spoken of, and go behind them, then setting your thin bit of Board against the narrow end of the top Slider of your upper Box, with your Mallet drive it home, to cut off the Combs that are in the Hole of the upper Box, and this must be thus performed. Hold the thin Board in your left Hand, and with your Mallet in your right, give it two or three Knocks till it is home, all the while pressing your Board with

with your left Hand hard against the end of the Slider, and carry your Hand even, that when you drive it in with the Mallet, that it may not slip over nor under, but keep directly against it till it is quite home; then take hold of the Hive, which now being cut off from the Box, will with little Force come up from the Box, and as you take it up, twist it a little rounding, so it will easier part from the Box, then carry it away from your Bees to another part of your Garden, twenty or thirty Yards, if your Garden will admit of it, that you may be easy and quiet in performing the rest; then place your Hive upside down, or with the small end downward, in a Pail, Peck, or Flower-Pot; so the small end going into any of these Vessels, it will stand very firm; then take an empty Hive and place it on the top of your Hive of Honey, Mouth to Mouth, then take a large Cloth, (I commonly do it with a Table-cloth) tye them round at the joining, that no Bees may get out, and then with a Stick strike pretty hard, so as to shake the Bees that are within, strike sometimes on one side, then on the oher, and so all round, let them stand a little now and then without striking, that the Bees that are crawling up may have time to go into the empty Hive; then strike again, all the while hold your Hand on the empty Hive to keep it in its place, which else would be like to fall off with the shaking of the other. When you have so done, more than a quarter of an Hour, let them stand still a little, and then taking the top Hive in your Hand, which now hath all the Bees that were in your other Hive, carry them away to the

the Napkin, and laying a Stick on that part of the Napkin which lyeth on the Ground, with one smart Stroke of the Hive on the Stick that is on the Napkin, you will shake out all the Bees together, where they will lie a little while and then crawling up the Napkin, go home to their Fellows, who will gladly receive them, as may easily be perceiv'd by their Shouts of Joy, which those who are us'd to them very well know; so here you have the Honey and no Bees destroy'd, but they undisturb'd keep on their Labours, not knowing what a slippery Trick you have play'd them; so you may carry your Honey in, and strain it to put up in Pots, which I need not direct; or make it into Mead, as shall be hereafter directed.

First, Observe that you must have a Mallet always in readiness, to drive home the top Slider, but if by thrusting with your Hand, the Cutter of the Slider makes its own way, thrust it home without using the Mallet at all, being the stillest way. This I have done, but it will not sometimes do without the Mallet, especially when the Combs in the hole of Communication are above a Year old.

Secondly, You go twenty or thirty Yards off from the Bees, that the Smell of the fresh Honey in the Hive you have taken off, may not draw the other Bees about you.

Thirdly, That you never venture to take off the Hive, nor upper Box, till you have good reason to judge that the Middle Box hath enough Honey to maintain them all the Winter, lest you venture the losing the whole Colony, for want of what you have taken away.

Fourthly,

Fourthly, That sometimes you will by this means see the Queen-bee on your Napkin, which will greatly please you, when you see with what Majesty she marches tip the Napkin with her Subjects, and to the Subjects she left behind.

Fifthly, That we do not at all disturb or hinder the Bees by these takings off of the Boxes or Hives, they still keeping on their Labours, since the way in and out is still the same, thro' the Ledge as before.

Sixthly, That you do not (when you are striking the Hive, to make them ascend into the upper Hive) strike that, I mean the upper Hive, for then you will be more likely to shake them down which are already ascended, than cause others to ascend to them.

C H A P. XVIII.

Directions how and when to take off the upper Box the next Year after the Straw-hive is gone.

I Need be but very short here, only observe the Directions before about taking off the Straw-hive. But when you have taken off your Box, you then must set it upside down on the Ledges of a Joynt-stool, turn'd upside down, and instead of a Straw-hive to set upon a Straw-hive, now you must set an empty Box on the full Box, and so knock as before directed on the Box, especially hard on the Edge round the Top, which is indeed now undermost next the Joynt-stool, so will the Bees all ascend into

into the empty Box, and must be knock'd out on the Napkin as before.

First, Observe that when we take off a Straw-hive from the Box, it is never to be us'd more in this way of keeping of Bees in these sort of Houses, but when you take off a Box, as soon as it is empty, let it be carefully laid by, that the Sliders and Glasses be not hurt.

Secondly, That you must always look into your House a little after you have took off your Box, and see if all be well; for if you have done your Work well, the Slider will quite shut the top hole that was open before the Slider was thrust home. But however, if you find it otherwise, that either it be not quite home, and consequently some of the Combs of the hole are torn off, then take a sharp Knife and cut off what bits of Combs stand up, and put the Shutter quite home; but if after all your Endeavours, you still find the Bees creep out at some place or other of the Slider, then with Lime and Hair stop the Hole, and so keep them in their Place.

Thirdly, When you strike the Box on the Stick that lies on the Napkin, in order to return the Bees home to their Fellows, you do not turn those Squares over the Stick where the Glass Windows are, lest the Stroke should endanger the breaking of the Glasses.

C H A P. XIX.

Directions how to let a Swarm out of your Box, as well as a Straw-hive.

IF you keep no Bees in Straw-hives to get Swarms from, and have a mind to have a Swarm early in the Spring, then however be sure to take off the under Box, which seldom hath any Honey in September, and set down your upper Box to the Floor, which is done by driving home the Cutter of the under Box, and then lifting up your Colony by the Handles, standing behind the Bee-house, let a Servant stand before, and whilst you lift it up from the under Box 2 or 3 Inches, take it quite away, and so set down your Box of Bees, and draw back the Door Slider under the Front Window, that they may have room to go in and out again thro' that Passage; and whereas some Bees will be about those Combs in the Box taken away, let them be knock'd out, or disturb'd with a Wing, or small Bough of green Leaves, and they will all fly home to their Fellows; so that your Colony being thus reduc'd to one Box, when the Spring comes they will not fail to give you a large and early Swarm, if you don't raise them upon another Box, which Swarm you may hive as well in a Box as a Straw-hive, and so set them down in your Bee-house, with the Mouth-slider drawn back, and the Top-slider close shut up; the Mouth of the Box being close to the hole in the Ledge as before

fore, so will you have an early Swarm out of your Box, as well as (nay sooner than you could have had) in a Straw-hive ; so that the way to cause them to swarm, is, to streighten them of room, and the way to hinder them from swarming, is to give them more room, both which may be done in Boxes; but perhaps some of the Country People will say, What is this to us who have no Boxes? Yes, very much one part of this Document ; for tho' we cannot teach you how to make them swarm so early in the Straw-hive as in Boxes, nor is it any matter whether you can make them swarm or no, for if they are full of Bees, and want room, they will swarm of themselves, and if they are not very full, and you did cause them to swarm, it would be so far from doing you a Kindness, that it would be a great Damage both to the Swarm and Staller, for the Swarm would be thin, and would also leave a thin House from whence he came, which perhaps would occasion the Loss of both in the time of Robbing : But what is most material for you to know, is how to prevent their swarming when the Year is too far spent, and this is done two ways; if you find your Bees are like to swarm after the Tenth of July, they are by all means to be prevented, either by cutting off a couple of Rounds from an old Hive, so lift up your Hive, and put the two Rounds under, then plaister all round, but the Entrance with Mortar, or else you may do it with two or three Brickbats, plaistering all between but the Porch. And so the whole Family are preserv'd, which being

being divided so late in the Year, would have been very hazardous.

C H A P. XX.

How to raise dead Bees to Life.

THIS seems to sound very strange at first, but if we consider the common Experiment among us, of giving a new Life to drowned Wasps and Flies, (by only drying them with a few warm Ashes) it will not appear altogether so improbable. And it is certain, that dead Bees may be rais'd after the same Manner to Life, if drowned, from the same Reasons, tho' I never try'd it; but I have many hundred times rais'd dead Bees to Life, tho' not such as have been drowned.

There are two fatal Diseases that Bees die of, besides that of old Age, *viz.* Hunger and Cold, and those that die of either of these Diseases, (provided they have not been dead long, nor their internal Organs suffer'd any Disorder by Putrefaction,) a gentle Warmth will recover them, I say a gentle Warmth, for I have try'd many Degrees of Heat, to prove which would be the most successful, and of all moderate Ways of warming them, I think that of the Hand is the best, and will send them more lustily home, than any other way. Take care you bruise them not, lest they sting you. The reason of Bees dying by Cold, is this. In the Spring, or more early Months, or in the Fall, or the latter Months, when the

Ground

Ground is cold and wet, if the Sun happen suddenly to shine out, as sometimes it doth, even as early as January, and warms the Bees, they presently bestir themselves to look out for Honey, and so range about from place to place, (till they are weary) tho' to little purpose, at last return home, and before they go into their Hive, they pitch on the Ground near it, to rest themselves, where the Ground being cold and wet, doth soon chill them, (that they cannot rise) and afterwards kill them; but if in any reasonable time afterwards, you take them up into your warm Hand, you may easily hold twenty or thirty of them at a time, and in less than a quarter of an Hour they will come to Life; and when you feel them very vigorous, and ready to force out of your Hand whether you will or no, then open your Hand and they will all fly every one to his respective home. By this means I have sav'd the Lives, or rather raised from the dead, many Thousands of Bees: but there are other Ways which I have made use of with great Success. When I have seen the Numbers have been too great for my Hand to recover, which may indeed be best for those that are afraid of the afore-describ'd Method, that is, I have spread a Pocket Handkerchief on the Grass, and so pick'd up all my Bees that have been so chill'd and kill'd, it may be five or six hundred at a time, and carry'd them in, and laid them at a convenient Distance from the Fire, that the Heat might be very moderate, and so now and then turning them, that they might all by turns have a share of the Warmth, always remembering to tye up the Corners

Corners of my Handkerchief loosely ; but however, so that they may not crawl out before they are able to fly, so would they be lost in and about the Fire ; so when I have found by their humming, and their lively attempting to get out, that they were able to fly, I have carried them out into my Garden, and opening my Handkerchief, they have all flown home, every one to his own Hive, as readily as if they never had been dead.

At other times I have taken four or five *Dutch* thin Boxes, and with a Nail or Bodkin, making Holes in the Covers, to give them Air, have gone and fill'd these Boxes with dead Bees, and put them in my Breeches Pockets, that of the Coat or Waftcoat is not warm enough, and so let them remain half an Hour or more, and then opening the Boxes in the Garden, they have all gone home as before.

But there is another cause of Death, and that is Famine ; and these also may be rais'd to Life as well as the other, but will not be so soon invigorated by Warmth, as those before spoken of, which died of Cold.

I was on the Eleventh Day of *April*, 1702. walking in my *Apiary*, observing my Bees, I saw that one of my Hives of Bees did not work at all, nor a Bee wag, which I was much concern'd at, because I thought it a very brisk one, so turning it up to see what was the Matter, I found to my great trouble, the Bees were all dead, and I at that time ignorant of what I am now treating of, so walking about and musing on my Misfortune, brought upon me by my own Carelessness in neglecting to feed them,

which would have prevented it, and at the same time called to mind that they could not have been long dead, for I had seen them play in and out at the same Hive but three Days before; at last came to a Resolution to try an Experiment, which if it should succeed, would very much please me, if not, it would do me no Damage. The Sun at that time shining out very hot upon the Gravel-Walks, not a little encouraging me in the Enterprize; I call'd for a Dozen of Plates to be brought me, I went and fill'd them all with my dead Bees, which were most of them fall'n down on the Bench whereon they stood, tho' some were betwixt the Combs, which I also knock'd out, and put to their Fellows, and so I left my Plates of Bees where the Sun did shine hottest, so that they were heated above and below, by the hot Gravel underneath the Plates, and the Sun shining upon them, where for a time I left them, with much Curiosity and Expectation waiting for the Event. When they had lain in this Posture about half an Hour, to my then great Amazement, I saw many of them in every Plate begin to wag their Legs, which gave me hopes of Success; so waiting about half an Hour longer, they all began to wag their Wings, and to move their Bodies a little, and in some time after to begin to crawl about a little; so then I took some Honey, and with a long Knife spread all the Combs of the Hive, and then tumbled them all into their Hive, where some stuck by their Backs, some by their Wings in the Honey, could they have been kept a quarter of an Hour longer in the Sun, they would have been more lively,

lively, but this could not be, for I kept them there as long as they would stay on my Plates, a little while longer staying, they would have all gone off the Plates, and been lost, crawling about the Garden ; but having put them all home into their old House, I turn'd them up, and set them in their old Place again, putting also a Plate of Honey under them, to try if it were possible to recover them, for knowing that they dy'd of Famine, thought if they were but recover'd enough to eat their Honey, they might possibly live, and yet become serviceable, and I was not mistaken, for they did eat their Honey, and tho' none of them came out of the Mouth of the Hive for several Days, not being able to fly, yet I found every Day when I examin'd them, by knocking gently on their Stool, that by their buzzing, which they always make upon hearing the least Noise, that they were stronger and stronger, and in about seven or eight Days they came out and set to Work, in order to reward me for my Care of them.

Thus I have given you an Account of Matter of Fact ; if any of more Ingenuity or Leisure, will graft upon this Stock, or improve this Experiment to the Advantage of the Bee-garden, I have my desire,

C H A P. XXI.

*How to make English Canary, no way inferior to
the best of Spanish Wines.*

ONE Hundred and twenty Pounds will make a Barrel of very good Mead; but if you make it of clear Honey, then your best way is to allow four Pounds to every Gallon of Water. Let your Quantity be much or little, which you ought to govern your self by, either considering the Bigness of your Cask, or the Quantity of Honey you have to make up into Mead, mix it in your Copper, and then boil it and scum it well, which Scum you may strain thro' Hypocrates's Sleeve, or a taper Bag, made of Swan-skin, with a Hoop at the broad end, letting the narrow end come to a point. This Bag will make it as fine as the other, through which you may put it. When your Mead is almost cold, Tun it up, Clay it down, and let it stand till it is fine, and old enough to drink, which sometimes will be sooner than other, according to the time of the Year, and Weather that comes upon it after making. This Liquor is one of the choicest of Wines, as well as the most wholesome of all the Vinous Liquors in the World, and ought to be drank and made use of in Possets, &c. as Canary; and thus us'd it is impossible to know whether the Posset was made of your own Mead or Canary.

Thus for making of Mead with clear Honey, but if you do it with the Washings of Combs, or

or dissolve all your Honey from the Combs, then you must dissolve it in warm Water, till an Egg will swim in the Mead the breadth of a Shilling. But here you must be very careful, that before you break your Combs into the Sieve or Strainer, you seperate all the young Bees, which you may easily know from the Honey, and also the Sandrach or Bee-bread, which is a yellow Substance, with which some of the Cells are fill'd, which otherwise will give your Mead an ill Taste, and then proceed to boil, scum, and tun as before. It is best if it be kept till it is a Year old, and if you make it well, as before, it will keep as long as you please. I have some now by me of almost Nine Years Old.

THE

CONCLUSION.

OH Wonderful! Hath the all-wise Creator plac'd such Wisdom, such curious Art, such Fortitude and Foresight, so polite a Government, and such indefatigable Industry in Creatures so small as the Bees: Then let us admire and adore, and put our selves under the Protection of that Divine Being, from whence all Wisdom and Goodness flows. Are these Insects so industrious for their own Preservation by timely gathering of Honey for their future Support and Happiness? And shall we neglect the (*unum Necessarium*) or chiefest Good, the future Happiness of our Immortal Souls; our Heavenly Father hath not conceal'd from us where this Honey is to be had. In his Wonderful Works of Creation and Providence, he hath taught us very much, and in his Word much more. Let us then imitate the industrious Bee who goes from Flower to Flower for Honey, and labours not in vain; so every Leaf of our Bible is full of Honey, full of Grace, full of Love, if we would but take Pains, by Reading, Prayer, and Meditation, to gather the Sweetness that is in them; we should then find our

our Labour not to be in vain. Can these poor Bees be rais'd to Life when dead, by the Skill, Care and Diligence of Man? And why not dead Sinners, who are dead in Trespasses and Sins, be rais'd to a Life of Grace here, and to a Life of Glory hereafter in Heaven, by the Power, Goodness and Mercy of our Heavenly Father, who is both able and willing to perform this great Work upon us, and in us, if we sincerely and in earnest go to him, who is rich in Grace to all that call upon him: He hath made it appear, that he is willing we should come to him, that he may raise us from the Death of Sin to the Life of Righteousness: And he has declar'd in his Word, to be able to save to the uttermost, who hath shew'd us his Goodness and Mercy; in sending his only begotten Son to be our Saviour and Redeemer, who is Life itself, and was sent to raise us from Death to Life, and from the Power of Satan unto God: But we are wanting to our selves, we keep at a distance from him, as the Jews of old, of whom Christ when upon the Earth complain'd; *You will not come unto me that ye might have Life.* Now this neglect of ours must arise from one of these two Things, either we do not think our Case so bad as it is, that we do so much stand in need of this Life which is offer'd us in Christ; or else we do not believe him to be both able and willing to save us. As to the first, we have all broken the Holy Law of God, and stand condemn'd by the Law for it, *The Soul that sins must die.* And as to the second, Christ is not only able but willing to save us, *Come unto me all ye that are weary* and

Then let us lay our burden down,
And I will give you rest; all those
That come unto me I will in no wise cast out, &c.

Then let's away without delay,
Unto his Throne of Grace,
And try if we, by Faith can see
His ever glorious Face.
His gracious Call is to us all,
Let's heavy laden come,
Oh, ever blest, he'll give us rest,
We need not fear his Doom.
His Sacred Word is on Record,
He'll turn his gracious Face,
There was no Blame to them that came,
To beg his help and Grace.
'Twas for our good he shed his Blood,
Oh, matchless was his Love,
And why should we ungrateful be,
And not his Grace improve?
Now gracious Lord thy Help afford,
Grant we thy Servants may,
By thy sweet Dove now (from above)
And always taught to pray.
Thy Kingdom come thy Will be done
On Earth, as Heaven 'tis,
And grant that we thy Face may see,
In Everlasting Bliss.. Amen.

F I N I S.

